THE FARMER'S MAGAZINE:

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(N°. XXI.)

BRANCH I.

ORIGINAL COMMUNICATIONS.

Non generant aquilæ columbi.

Ye ſons of Ceres, rear the pureſt ſeed;
Nor vainly think that owls will eagles breed.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

On the Selection of Grain for Seed.

IN the many intereſting communications ſubmitted to the public through the medium of your Magazine, little, if any thing, has been ſaid on the ſubject of preſerving pure and unblended valuable varieties of the different ſorts of grain and roots adapted to the climate and ſoil of the Britiſh iſles; or on that of ſelecting new varieties of theſe genera of grain, &c. as they appear poſſeſſing qualities deſirable by the agriculturiſt. Every attentive obſerver of corn culture ſees the importance of this ſubject to the whole realm. The attention of the farmer it more particularly claims. In blended crops ripening muſt be unequal, conſequently the produce inferior in apparent quality, as well as in real, to the perſon manufacturing it; and even ultimately to the conſumer. The quantity, it is apprehended, muſt alſo be leſs than where one valuable variety of grain is cultivated on the ſame ground; for, where blended grain is ſown, part of the ſoil is often occupied with ſome ears that, being too late, have not time to arrive at perfection, and with others that, being too for-

ward, drop part of their ſeeds before the crop is cut, or ſhed them in the act of reaping it.

Perſeverance in cultivating grain blended, in however ſmall a degree it may be ſo, is attended with *increaſing loſs*; for, in a few ſeaſons, from the diſſemination of the *farina fœcundans*, the original deſirable variety vaniſhes among the multitudes that have ariſen, forming a motley mixture altogether unworthy of occupying a place in the expenſive cultivation of the corn-lands of this country. Several eminent agriculturiſts of the preſent day, have made ſelections of grain and roots, that have afforded decided advantages to thoſe who have obtained and cultivated them. To preſerve any variety* of any of the genera of cultivated grain *correctly* pure or unblended, where there is a great extent of ſowing, is what perhaps cannot be effected; though purity may be approached ſufficiently near for every valuable purpoſe. This is only to be accompliſhed by recurrence to firſt principles as often as poſſible; for, if one ſeaſon is neglected, years may elapſe before *the point ſet out from* is regained. New or different varieties of the ſame genus of grain will appear in the produce, where no blending was apparent in the ſeed corn.

Although different varieties will not, it is imagined, ariſe from the ſame individual grain the firſt ſeaſon it is planted, it is preſumed they may from diſtinct grains even of the ſame ear. This being admitted ſhows, not only the indiſpenſable neceſſity of continual, ſucceſſive, annual ſelection, but alſo of extirpation† of all ears *as weeds*, as ſoon as they ſhoot out of the ſtem, and diſcover ſuſpicious appearances. If ſelected ‡ corns are thraſhed with a machine, it will much defeat the purpoſe intended to be accompliſhed, eſpecially if more than one variety of the ſame ſort of grain is cultivated on the ſame farm. That beautiful and valuable oat, the potatoe-oat, is already much blended in general, and threaten d with being abandoned for having degenerated; a weakneſs vulgarly imputed to all ſorts of grain, frequently to excuſe the indolence of the cultivator.

Thoſe beſt acquainted with corn-huſbandry conſider it very local, and that any conſiderable variation in climate and ſoil requires different management, in many reſpects; and the adoption and ſelection of varieties of the different genera of cultivated grain, ſuitable to particular ſituations, has not formed the leaſt prominent

* By a variety is meant a particular ſpecies of any of the genera of grain.

† This operation is propoſed to be performed only on the immediate produce of the ſelected e rs of any variety of grain thought worth preſerving by ſeparate cu ture.

‡ Theſe may be rubbed or beaten out by the hand with a beetle, on a ſheet.

minent feature in the management of ſeveral of the firſt agriculturiſts of the preſent day.

The breeds of domeſtic animals for ſlaughter, as well as for other purpoſes, have been much improved in modern times. From the high-mettled racer to the Devonſhire donkey; from the Tees-water ox to the Chineſe gunter;—in a word, from the ſtud of the peer to the ſty of the diſtiller, all have received their ſhare of attention, and coſt much expence. Blood horſes have covered at fifty guineas. It is ſaid twelve hundred guineas have been given for the ſeaſon of a ram. Even dogs are advertiſed to ward bitches, at an eminent ſporting ſhop in Yorkſhire, at ſeven guineas a bitch. And the writer aſks pardon of a certain national inſtitution, if it did not offer a cool two hundred of the ſame coin, for a male tortoiſe cat.

With all theſe things, and many more ſtaring them in the face, it is to be hoped that modern corn-farmers will beſtir themſelves a little, and not ſuffer the breeders of live-ſtock, even thoſe of blue dogs and tortoiſe cats, totally to loſe ſight of them in the race of improvement. That the quantity and quality of bread-corn being of the firſt importance to the community in which they live, they will conſider a few ſhillings well ſpent in obtaining a valuable variety of any of the genera of cultivated grain, and a little time well beſtowed on ſecuring it.

From what has been ſaid, may it be concluded, that the value of the beſt exiſting varieties of grain, roots, and fruits, adapted to particular ſoils and ſituations, is either not yet ſufficiently known, or if ſo, not admitted and appreciated, by the agriculturiſts of Great Britain and Ireland in general; that it is of much importance to cultivate *thoſe unblended varieties only* of the different genera of grain, &c. that are known beſt to ſuit the climate and ſoil of a farm—that regular, ſucceſſive, annual ſelection, and ſeparate culture, are eſſential to preſerve thoſe varieties, or to obtain new ones, if any appear worthy of notice—that the occupier of land, being generally the beſt judge of what varieties of grain, &c. are moſt ſuitable to his ſituation, would, probably, find his account in perſevering in a regular, ſimple ſyſtem for obtaining and ſecuring thoſe varieties.

MISO-MIXIS.

TO

* Vide Daniel on Britiſh Sports, vol. i. *apud finem.*

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

Obſervations on the Working of Oxen by LORD SOMERVILLE; *with Anſwers to Queries on that Subject.*

SIR,

YOU were good enough to think a few lines I had the honour of addreſſing to you ſome months ago worth inſertion in your Magazine; and as a correſpondent, Vol. v. p. 296. has expreſſed a wiſh to learn ſome further particulars on the ſubject of working oxen, which, although formerly hinted at, were not detailed at length, only becauſe the ſubject has been treated on elſewhere, I hold myſelf bound to comply with a requeſt ſo properly made, and I have great pleaſure in being able to do it.

Your correſpondent puts ſome queſtions on the ſubject, and then concludes by ſaying, that, if they be anſwered ſatisfactorily, the queſtion in favour of oxen, as beaſts of labour, will appear to receive a complete deciſion—Firſt, as to the nature and ſituation of the land (and the ſubſoil), whether it be ſtony or ſteep, or a clay. My own ſoils, of which the queſtion is aſked, are, firſt, a loam on a limeſtone rock, free fine working land, if at all level ſtone braſh tending towards a gravel and clay.

The ſurface of the two firſt is in general extremely broken and ſteep; the laſt is nearly flat, except in certain caſes. The ſteepneſs of the ſurface can hardly be deemed hoſtile to labour of oxen, when it is conſidered that thoſe counties, where oxen have been and will ſtill be worked, are broken in their ſurface; many of them ſtony in a very great degree, yet very well farmed; for inſtance, Hereford, Suſſex, and Kent. Many diſtricts of thoſe counties are on a very ſtrong clay, the wealds of Suſſex notoriouſly ſo, part of Kent, much of the vales of Hereford and Leominſter, and the country around Bridgewater, the grazing marſhes of which equal any in quality, and all a very deep clay.

As to the next query, Whether they do not poach heavy land more than horſes?—The foot of the horſe is concave, the conſequence of which is an adheſion, or rather a ſuction, which impedes his action very much, and from its form muſt neceſſarily compreſs more than any other ſhape whatever. Now, the foot of the ox is cloven; it enters the land diſtended by the weight and action of the animal, and comes out contracted, by which its egreſs is comparatively eaſy, and conſequently the labour or exertion diminiſhed, and the injury done to the land is leſs. In proof of which, let horned cattle wander in moſſy and unſound land

land as much as they will, and there is hardly an inſtance of their ſticking in it, where horſes would infallibly require to be drawn out, or would be loſt in it. This reſults from the formation of the feet, and is a concluſive argument as to the aptitude of horned animals to labour on deep land.

We come next to the ability of oxen to do extra labour, when not fully employed in plough. My own oxen cannot be ſpared from conſtant labour; and, except on Sundays, or in a very hard froſt, there is hardly a day that they lie ſtill; but, if they did, there is a profit attending their growth which is moſt materially in their favour, ſhould a week or ten days' reſt occur. This profit we know to be equal, on the average, to 20 per cent. on their value.

Animals which can do hard days' work for two months in the year muſt be ſeaſoned to labour, and conſequently would do it through the whole year, if required; more eſpecially as we know that labour not overdone adds to the growth of any animal. The principle which gives the premium for working cattle at the March ſhow in London, is, that certificates of the greateſt work done from the 1ſt of January to the 25th of April, previous to their being turned out to graze, are ſufficient; becauſe, if the work is trifling, the certificates mark that it is ſo, and if that work was done on the ſpur of the occaſion, and the animals previouſly unſeaſoned to labour, it would put them out of condition to graze for the premium of that ſeaſon at leaſt, if not deſtroy them altogether. Hard labour cannot be done by fits and ſtarts, without injury to any animal whatever: take, for inſtance, the exerciſe of the hunter, or the training of the race-horſe, or the endleſs ſlavery of the hard run poſt-horſe.

We are now to conſider them as equal to carry on road-work. That my own oxen do a very great deal of work on the road is certain, becauſe we carry much lime for manure. We drive at the rate of 20 hogſheads, *i. e.* 100 buſhels Wincheſter meaſure per acre. We carry as much dung as we can, and conſiderable quantities of timber; for the growth and waſte of it is there very conſiderable. In addition to which, our farms lie much divided, which makes a moſt eſſential difference in labour, and the roads are ſtony beyond meaſure. The general practice of the county is to work oxen on the road, ſome more and ſome leſs; ſo it is even in the moſt hard and ſtony diſtricts, as in Glamorganſhire, in Herefordſhire, in Suſſex, and in the Eaſt-Riding of Yorkſhire. The timber-waggons, which carry timber from the vale of Pickering, in Yorkſhire, to Scarborough, work two oxen; the oxen do not work before to aſſiſt the horſes, but in the timon or pole behind, and on them, therefore, the dependence is to conduct

great loads in very hilly and ſtony roads; a deciſive proof that they can bear road-work, even of the ſevereſt nature.

We now come to the laſt query, Whether they be liable to be lamed as horſes? to which, we truſt, the following is a moſt ſatisfactory and deciſive anſwer: In the 20 years I have worked them, I can hardly remember where any one ox has been laid by from lameneſs for 48 hours together; and if an inſtance has occurred, it has occurred but rarely; nor do I remember to have loſt one ſingle ox or ſteer in labour, or ever had to replace one which failed in work.

The moſt common cauſes of temporary lameneſs in oxen are ſlight ſtrains on ſtony roads, or a ſtripping between the hoofs, ſomewhat ſimilar to the foot-rot in ſheep, and ariſing indeed from the ſame cauſe, namely, the corroſive properties of the ſtrong dews which fall towards autumn.

Theſe facts might have been ſtated before, but two confirmations of the powers of theſe admirable animals would have been wanting, which may now be ſupplied. The firſt is, that, having this ſpring claimed the premium from the Bath Society for labour done by oxen in 1803—three competent perſons were ſent to inſpect and report on the ſpot. The particulars of which, as far as regard the claim to this premium for 1803, I do not feel at liberty to ſtate, becauſe it is not yet finally adjudged, and becauſe that Society has a juſt claim to the publication of ſuch papers in its own volumes, the circulation and character of which are well known. But, for your information, I feel myſelf at liberty to ſay, that, in addition to the report itſelf, they did ſtate as follows: That notwithſtanding the quantity of labour done, and the failure of the green crops of 1803, owing to the drought, by which our oxen were compelled to be put on ſtraw and hay in the beginning of September (in many places earlier), yet, that ſince January 1. 1804, 22 acres of peas, one ploughing—50 acres of barley, two ploughings—60 acres of turnip fallow, 55 of which were 2 ploughings—in all 237 acres, had been laboured by 16 oxen and ſteers, a proportionate number of which were too young to do much, yet that they were, at that time, namely, in May laſt, in very good working condition, and, it might have been added, very high in fleſh.

Another is, that, hard as my own oxen labour through the year, and during the greater part of their growth, yet they had the good fortune to gain the firſt prize, or L. 30, at the Barbican cattle-ſhow in March laſt, where there were 12 or 14 yoke qualified to compete for it. Had my oxen in general been injured by over work, they could not have come to a public exhibition, after 10 months grazing, with ſuch credit to themſelves as they have

have done for three years paſt, and, it is to be hoped, will continue to do.

Mr Weſtcar, the celebrated grazier of Hereford oxen, was heard to ſay of a very fat ox then on ſale at Smithfield: 'You think this ox has had nothing in its life to do except to get fat, but he has earned L. 30, beſides his keep, in hard labour, before I grazed him.' Such, or very nearly ſuch, is the hiſtory of every ox which this moſt celebrated judge of cattle brings to market.

Having noticed all that was required of me, I cannot lay down my pen without obſerving, that although I have ſtated what can be and is done in other counties, yet that I do not adviſe the uſe of draught-oxen in every county; indeed, in no county, unleſs the breed be active and hardy, and unleſs there is a determination to do every juſtice to them: whether they will be generally applicable to labour in Scotland will ſoon be brought to the proof: And here I may be allowed to notice the effect of the exhibition of cattle at the laſt meeting of the Cheviot Society at CampTown, where a bull and two cows, of the Devon breed, were produced by Mr Andrew Blackie of Holydean; a bull and two cows, of the Hereford breed, by Mr Rutherford of Edgerſtoun; and a bull and two cows, of the beſt Weſt Highland breed, by Mr J. Riddell of Timpindean, from the ſtock of the Duke of Argyle.

Pains were taken in ſelecting theſe cattle, and, in the hands of ſuch men, there can be little doubt that every juſtice will be done to them, whether as dairy ſtock, or with a view to that competition, both in labour and feeding out, which muſt naturally ariſe from ſelection of theſe moſt excellent breeds of ſtock brought into the ſame neighbourhood: they were much noticed and admired, not only by the farmers and landholders intereſted in this queſtion, but alſo by the herds and ſervants aſſembled.

I have the honour to be,

Langlee, 25th Sept. 1804. SOMERVILLE.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

Comparative Expence of Farm Labour, &c. in 1790 *and* 1804.

SIR,

I OBSERVE, in your 19th Number (vol. 5. p. 338.), 'A ſtatement of expence attending the culture of corn in Norfolk, in 1790 and 1804, preſented to the Committee of the Houſe of Commons,' which may be correct ſo far as it goes, but conveys, in my humble opinion, an inadequate view of the ſubject meant

to be elucidated. On that account, I take the liberty of handing to you a copy of the ſtatement ſent to the Committee from Eaſt Lothian, which embraces every branch of the Committee's inquiries, and ſatisfactorily proves, that the late alteration upon the corn laws of this kingdom was abſolutely neceſſary to the proſperity of Britiſh agriculture. Perhaps, after all, protecting duties, as ſuggeſted in the obſervations which follow the ſtatement of expences, might have anſwered the purpoſe equally well, at leaſt the trade in corn would thereby have been put upon a more ſteady footing; but be this as it may, ſo long as the price of labour, and the amount of public burdens, are ſo much higher in Britain than what they are upon the Continent, regulations of one kind or other are imperiouſly called for, in order that the home cultivator may not be underſold in his own natural market. Whether the increaſe of rent can fairly be taken into account, may be queſtioned by ſome people. To the farmer, who pays it, the increaſe is preciſely the ſame thing as if it was money expended for other purpoſes; though, in forming a general regulation, I am not altogether ſure whether its weight ought to be thrown into the ſcale. A poſtſcript, not included in the ſtatement, is therefore added, which will ſhow how far the expence of raiſing corn is augmented by the increaſed value of labour and public burdens ſince 1790, which is ſo plain and diſtinct, that every one of your readers may be enabled to judge of its correctneſs. I am, Sir, your's, &c.

A FRIEND TO AGRICULTURE.

Statements of Expence attending the Culture of Corn in Eaſt Lothian 1790 *and* 1804.

STATEMENT, No. I.

1790. Average rent of good land, 30s. per Scots acre.
1804. Average rent of good land, 60s.

N. B. It is not an eaſy matter to aſcertain the average rent of land; but one thing is aſſuredly true, that more land is now ſet at L. 3, than what, in 1790, was ſet at 30s.

1790.	Commutation money for road-work,	20s. per plough
1804.	Commutation money for ditto,	30s. per ditto
1790.	Labourer's wages, - -	10d. and 12d. per day
1804.	Labourer's wages, - -	16d. 18d. and 20d.
1790.	Lime, per boll of ſix buſhels,	11d. and 12d.
1804.	Lime, per ditto, - -	20d. and 22d.
1790.	Dung, per cart-load, -	2s. and 2s. 6d.
1804.	Dung, per ditto, - -	4s. 4s. 6d. and 5s.

1790.

1790.	Harveſt-work, - -	9d. 10d. and 14d.
1803.	Harveſt-work, - -	14d. 18d. and 2s.
1790.	Turnip hoeing, and other field-work, by boys and girls, - -	5d. per day
1804.	Ditto. - - -	7d. and 8d.
1790.	Ale for harveſt-work, per caſk,	5s.
1804.	Ditto for ditto, - -	8s. and 9s.
1790.	Smith-work, per plough, -	30s.
1804.	Ditto, per ditto, -	50s. and 60s.
1790.	Wright-work, per plough, -	25s.
1804.	Ditto, per ditto, -	40s.
1790.	Sadlery-work, per plough, -	15s.
1804.	Ditto, per ditto, -	30s.
1790.	Price of cart-horſes, -	L. 18 and L. 22
1804.	Ditto of ditto, - -	L. 30 and L. 35
1804.	Window lights doubled, owing to the way they are now aſſeſſed,	
1790.	Horſe tax, - -	None
1804.	Horſe tax, - -	12s. 6d. each
1790.	Property tax, - -	None
1804.	Property tax, - -	6d. per pound of rent

N. B. The property-tax, during a nineteen years' leaſe of a farm that pays L. 1000 of rent annually, will abſorb L. 475 of the tenant's profits; or, in other words, make him that ſum poorer at the end of his leaſe than he would otherwiſe have been, independent of the intereſt thereupon, which, taken according to compound calculation, would more than double this eſtimate.

STATEMENT, No. II.

Expence of a Ploughgate of Land for one year, ſuppoſing 50 Acres, Scots Meaſure, to be the Quantity of Land therein contained.

In 1790.

Rent, at 30s. per acre, - -	L. 75	0	0
Intereſt on capital ſtock—ſay on L. 150, -	7	10	0
Allowance on horſes for tear and wear—ſay 12½ per cent. on L. 40, - - -	5	0	0
Smith, Wright, and Sadler, - -	3	10	0
Ploughmen, - - - -	18	0	0
Labourers, per plough, - -	4	0	0
Incidental work, per ditto, - -	5	0	0
Harveſt-work and board, per ditto, - -	15	0	0
Road tax, per ditto, - - -	1	0	0
Window lights, on an average, per ditto, -	0	5	0
	L. 134	5	0

In

In 1804.

Rent, at 60s. per acre,	L. 150	0	0
Intereſt on capital ſtock—ſay on L. 200,	10	0	0
Allowance for tear and wear on horſes—ſay 12½ per cent. on L. 60,	7	10	0
Smith, Wright, and Sadler,	6	0	0
Ploughman,	25	0	0
Labourers, per plough,	6	0	0
Incidental work, per ditto,	7	10	0
Harveſt-work and board, per ditto,	25	0	0
Road tax, per ditto,	1	10	0
Window lights, on an average,	0	10	0
Horſe tax, per plough,	1	5	0
Property tax, per ditto,	3	15	0
	L. 244	0	0

From the above it appears, that the expences of cultivating a ploughgate of land in 1804 (rent included) exceed thoſe of 1790 in no leſs a ſum than L. 109, 15s. without taking into account the additional money laid out in purchaſing lime and dung, the repairs of houſes and fences, the private expences of the farmer, or the maintenance of himſelf and family; and, as nearly the whole of this increaſed expence, rent excepted, falls upon the produce of 30 acres of land ſuppoſed to be under corn crops, it alſo appears that the additional charge upon each acre under corn is L. 3, 3s. or thereby, after deducting L. 15 as the increaſed rent of 10 acres under graſs. If we ſhall ſuppoſe that the diſpoſable produce amounts to five bolls and one half per acre, on an average, after ſeed, horſe corn, and what is uſed in the farmer's family, are deducted, or, in other words, that 165 bolls are diſpoſed from each ploughgate, then every boll of diſpoſable corn is now raiſed by the farmer at an increaſed expence of 11s. 6d. or thereby, above what it coſt him in 1790. From all which things, a reviſion of the corn laws muſt appear abſolutely neceſſary, in order that the cultivators of Britiſh ſoil may be able to cope with thoſe of foreign countries, even in the home markets. Exportation may now be conſidered as out of the queſtion. Indeed, the ſimple way of correcting the evil which oppreſſes agriculturiſts, is to repeal every one of the corn laws, and lay protecting duties upon foreign grain imported into this country, calculating theſe upon fair and liberal principles, ſo as the difference in the value of rent, labour, and public burdens, may at leaſt be equalized by ſuch duties. Then the Britiſh farmer would be on an equal footing with

with his brethren abroad, which at this time is certainly not the caſe.

P. S. If rent is deducted from the increaſed expences of a ploughgate of land, the balance remaining will be L. 34, 15s.; and laying this ſum upon the diſpoſable produce, it appears that the increaſed value of labour and public burdens, taken by themſelves, amount to 4s. 2d. upon each boll of corn carried to market, under the ſuppoſition that 30 acres of corn are the average number cultivated by one plough, and five bolls and one half the quantity of diſpoſable produce from each acre.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

On the Analyſis of Limeſtone.

SIR,

IN Number 18th of your Magazine (6th February 1804), I obſerved a communication, under the ſignature of A. S., on the importance, and modes, of analyſing lime. And in Number 19th (13th Auguſt 1804), I obſerved two communications by Sir George S. Mackenzie of Coul, Bart. which are meant as a refutation of the mode of analyſis propoſed by A. S.; and another mode, in Sir George's apprehenſions better calculated to anſwer the purpoſe, is propoſed in its place.

On theſe communications I beg leave to offer a few remarks.

1. I cordially agree with A. S. on the importance of having all limeſtones and calcareous ſubſtances throughout the kingdom analyſed, ſo far, at leaſt, as to aſcertain the proportion of calcareous matter they contain, which is the only point connected with practical utility. In addition to the reaſons pointed out by A. S. for analyſing calcareous ſubſtances, I beg leave to ſuggeſt another; that when a new rock of limeſtone, or a bed of ſhell-marl, or clay-marl, or ſtone-marl, are diſcovered, it is much eaſier to aſcertain by chemical analyſis, whether they may be wrought with advantage, than by any other mode whatever. I have known people lay out conſiderable ſums in running drains, opening quarries, building kilns, providing fuel, &c. &c. to get poſſeſſion of a rock of limeſtone, which, after all their labour, proved to be good for nothing. In all caſes where I was ſo fortunate as to diſcover any of theſe ſubſtances, I aſcertained their value by chemical analyſis; and where the diſcovery was followed out, the practical application of it has correſponded with the analyſis. In ſome of the Hebridian Iſles, I found

found the people were in the practice of bringing ſhell ſand from bays and creeks on the main-land, at the diſtance of from 60 to 80 miles, to manure their land. By analyſis I found that the ſhell ſand, in many of the creeks and bays along their own ſhores, was much better adapted to ſerve their purpoſe than what they were bringing from ſo great a diſtance.

But theſe things are only ſtated in corroboration of what A. S. has advanced reſpecting the utility of analyſing calcareous ſubſtances. He has deſcribed an experiment of making lime into mortar, as a mode of analyſing limeſtones. I do not chooſe to enter into that point at preſent; but ſhall only obſerve, that were the making of mortar conducted on the principle of ſtrict chemical analyſis, I entertain no doubt but it might be made harder than flint, and leſs frangible than the moſt perfect columnar baſalt.

2. The point on which I propoſe chiefly to make remarks is the mode of analyſing limeſtones propoſed by A. S. viz. by ſeparating and weighing the refuſe, and deducting its weight from the original weight of the limeſtone operated upon. This mode of analyſis Sir George has choſen to controvert; and I beg leave to offer remarks upon it, and ſhall afterwards conſider the mode he propoſes.

I would not have troubled you with theſe remarks, had I not felt ſome little intereſt in this ſubject. The mode of analyſing limeſtones propoſed by A. S. I have reaſon to believe, was firſt ſuggeſted by me. After trying it during ſeveral years, I gave a ſhort deſcription of it in an Eſſay on Manures, publiſhed by the Board of Agriculture; but who mangled and mutilated that, as well as ſeveral other parts of my Eſſay, *more ſolito*. I do not pretend to ſay that I was the firſt perſon to whom this mode of analyſing calcareous ſubſtances had occurred, but that I had never heard mention of it, nor ſeen it in any book.

Sir George objects to the uſe of common muriatic acid in the analyſis of limeſtone, becauſe it is apt to be adulterated by a portion of ſulphuric acid, which, forming a nearly inſoluble compound with lime, would detain a part of it among the refuſe. If the farmer procures his acid from a laboratory which is uſed to furniſh agents for chemical experiments, it is not likely to be ſo impure as to occaſion any ſenſible error in the reſult. But ſuppoſing the muriatic acid to be adulterated with a hurtful proportion of ſulphuric acid, muriate of varytes, ſlowly and cautiouſly dropped into it, will carry all the ſulphuric acid to the bottom, and the purified muriatic acid may be decanted off.

Along with the acid, the farmer ſhould be furniſhed with an accurate balance, ſuch as are commonly uſed for weighing gold,

and

and weights conſiſting of 100 equal parts. A wire twiſted upon a cylender, and cut acroſs in a line parallel to the axis of the cylender, makes very excellent weights; and they may be halved, quartered, and reduced, to any fraction of a part. Where theſe are wanting, patent ſhot furniſhes weights of ſufficient accuracy.

A portion of the limeſtone being pounded, or rather reduced to ſmall fragments, and dried before the fire, 100 parts of it muſt be weighed, and put into a tall glaſs. The acid, conſiderably diluted, ſhould be added in ſmall portions, and, towards the concluſion, the ſediment ſhould be ſtirred with a glaſs ſpatula. Care ſhould be taken that, after the ſolution is completed, the acid ſhould be as little in exceſs as poſſible. For, while the acid has lime to act upon, it will not combine with iron, clay, or other ingredients in the compound; and the dilution of the acid renders it leſs liable to combine with theſe ingredients.

If, notwithſtanding all due care, there be reaſon to ſuſpect that the acid has combined with a portion of iron, or other ingredient, dilute with warm water, and drop in a portion of ammonia, which will carry down metallic oxyds, or other ingredients that may have combined with the acid, without affecting the lime.

Meanwhile a piece of good filtering paper ſhould be made into a conical form, dried before the fire, weighed, and its counterpoiſe allowed to remain in the ſcale. This filter being put into a fluted glaſs funnel, placed in the mouth of a clean wine decanter, ſhould have the whole ſolution, with every particle of the ſediment, waſhed into it; and the ſediment ſhould be waſhed by repeated additions of warm water, until every particle of the ſalt of lime is carried through into the decanter, leaving the ſediment upon the filter. In waſhing the ſediment, too much water ſhould not be added at a time, becauſe its incumbent preſſure may force ſome particles of the ſediment through the paper. If any particles ſhould get through, from too great a weight of water, they ſhould be allowed to ſubſide to the bottom of the decanter; and the clear liquor being poured off, they ſhould be returned to the filter, and waſhed as before.

We have now got all the lime in ſolution in the decanter, and every particle in the maſs, that was not lime, left upon the filter. It therefore only remains to dry the filter and its contents before the fire, and to weigh it. The number of parts by which the filter now exceeds its counterpoiſe is the weight of the refuſe; which being deducted from 100, the original weight of the limeſtone, the remainder is the proportion of carbonate of lime contained in the maſs.

If the farmer chooſes, he may proceed to confirm his analyſis by

by ſyntheſis. To do this, he has only to enlarge the volume of his muriate of lime by boiling water, and precipitate the lime by a purified ſolution of carbonate of pot-aſh. The decanter being kept warm near the fire, the precipitated carbonate of lime will ſubſide to the bottom. The clear liquor being decanted off, the lime, which is now the ſediment, muſt be thrown either upon the ſame or a ſeparate filter, waſhed and dried. If its weight, added to that of the refuſe, amounts to 100, he may be certain the proceſs has been accurately conducted.

3. It is of very little importance to the farmer to know the ſpecies of extraneous matters which enter into the compoſition of his lime; but it is of great importance to know their groſs amount, or the proportion they bear to the maſs, for reaſons which A. S. has very properly ſtated. The moſt common alloy of limeſtone is ſand, or quarty and clay. When the limeſtone operated upon has only been broken into ſmall chips, the particles of ſand retain their original ſize, and their proportion in the alloy may be known by waſhing off the clay, and weighing the ſand that remains.

Lime that contains much ſand eaſily ſlacks by expoſure to the air; but that which contains much clay often requires to have the water added to it while it is red-hot; becauſe the clay forms a paſte which reſiſts the penetration of the water. Sandy limeſtone is reckoned beſt for mortar; and clay-alloyed limeſtone often contains magneſia, or magneſia combined with ſulphur, which efflorefces into ſulphate of magneſia, or Epſom ſalt. I have ſometimes obſerved that the limes of theſe different ſpecies encourage the growth, the one of one ſpecies, the other of another ſpecies of weeds.

But ſtratified limeſtone often contains coal-tar, and particles of carbon interſperſed through it; and the ſtratified limeſtones of Caithneſs and Orkney contain not only various proportions of coal-tar, but even numerous pieces of coal interſperſed through their maſs. It would be wrong in the farmer to ſet down theſe ingredients as refuſe in his lime, becauſe they are wholly conſumed in burning the ſtone, and, as far as they go, they operate as fuel to aſſiſt the burning. When theſe ingredients exiſt in limeſtone, they ſhould either be deflagrated with nitre before the ſtone is analyſed, or the ſtone may be analyſed before it is burnt. The ſame remark applies to ſulphur, which is either expelled in burning the ſtone, or a part is acidified, and forms, with the lime, a ſmall proportion of gypſum.

But limeſtone often contains magneſia, and other earths beſides ſilex and alumina. It often contains gypſum, mica, zeolite; and moſt frequently oxyd or carbonate of iron, and other metals; not

not unfrequently alſo it contains pyrites of iron, of copper, or other metals.

When limeſtone is alloyed with a variety of theſe ſubſtances, and we wiſh to know their relative proportions, recourſe muſt be had to the more complex and intricate analyſis deſcribed by Sir George Mackenzie. But ſuch inveſtigations are foreign to the practical purpoſes of the farmer.

The only caſe where an accurate inveſtigation of all the matters which enter into the compoſition of limeſtone may be attended with practical utility, is where it is propoſed to compound mortar on ſcientific principles, and to aſcertain the quality and quantity of ſand neceſſary to give it the greateſt hardineſs and durability. I have ſeen many ferruginous limeſtones, which, I am ſtrongly impreſſed with a belief, would make better mortar for building under water, than that which is mixed with puzzoland, or the refuſe of iron-works. In ſuch limeſtones the iron muſt be more intimately mixed than can be effected by mechanical means, and hence muſt operate more powerfully. There are various ſtrata of limeſtone of this deſcription on the north-eaſt ſhore of the iſland of Arran, from the Currie to beyond the Cock, which are of a florid blood or brick red-colour, very compact, and of ſmooth fracture, and ſeem to contain little other alloy but oxyd, or carbonate of iron. I wiſh the Directors of the Caledonian Canal would pay attention to them. If their proportion of iron be ſufficient, they will make a very ſuperior cement for their locks and bridges; and, even though a ſmall addition of iron may be neceſſary, the ſubaqueous cement muſt ſurpaſs that which has all the iron combined mechanically.

It may only be neceſſary to add, that, for the proceſſes here deſcribed, diſtilled water anſwers beſt. But, where this cannot be procured, any water that is free of ſediment, and that contains no ſalt capable of being decompoſed during the proceſs, will anſwer equally well.

By attending to what has been ſuggeſted, any farmer may eaſily aſcertain the proportion of alloy or refuſe contained in different limeſtones or marls; and the analyſis of the refuſe itſelf, ſo as to aſcertain the proportions of the primitive earths or metals which enter into its compoſition, is, to him, an object of no practical utility.

4. I propoſed to offer a few remarks on the mode of analyſis ſuggeſted by Sir George, pp. 266. 267. of No. 19th, founded on the weight of carbonic acid gas, that eſcapes from limeſtone during its ſolution in pure muriatic acid. This mode was firſt propoſed by the celebrated Dr Black, and reſts on the ſuppoſition that corbonate of lime always contains the ſame invariable proportion

portion of carbonic acid gas: a ſuppoſition that farther experience ſeems to have weakened, if not wholly overthrown. I have met with ſeveral ſpecies of indurated chalk and other limeſtones, where the ſilex and clay ſeemed to have formed a ſort of chemical union with the lime like indurated mortar, to the excluſion of part, at leaſt, of the carbonic acid; and thus ſuch ſtones emitted very little effervescence during ſolution in acids. But not to reſt any part of the argument on my own authority, I beg leave to obſerve, that chymiſts of the greateſt accuracy and celebrity, who have analyſed pure carbonate of lime, where no chemical attraction for other earths can be ſuppoſed to have excluded the due proportion of carbonic acid, have differed conſiderably in the proportion of carbonic acid gas which this carbonate yielded. Thus, in Dr Thomſon's Chemiſtry, laſt edition, vol. ii. p. 392. we find the following analyſis of carbonate of lime.

Bergman.		Kirwan.
34		45 acid.
55		55 lime.
11		0 water.

Dr Thomſon.
50 acid and water.
50 lime.

The Doctor obſerves in a note, that "The water ſeems, in pure cryſtallized carbonate, to amount to 3 or 4 per cent:" but he expreſſes a difficulty in aſcertaining its exact amount; though we ſhall take the extreme, or 4 per cent., for the proportion of water, which leaves 46 per cent. of carbonic acid. Thus the carbonic acid of Kirwan exceeds that of Bergman no leſs than 11 per cent; Dr Thomſon's acid exceeds that of Kirwan 1 per cent. and that of Bergman 12 per cent. I think it much more natural to ſuppoſe that the proportions of carbonic acid and of water of compoſition in pure carbonate of lime, admit of conſiderable variations, than that chymiſts of ſuch rigid accuracy ſhould have been miſtaken. It follows, therefore, that any calculation of the proportion of lime, contained in a maſs even of pure carbonate of lime, from its loſs of weight during ſolution in pure muriatic acid, muſt be liable to very great errors. But, in compound limeſtones, the errors muſt be multiplied almoſt to infinity, for in theſe ſtones the different earths and oxyds of metals are more or leſs united to the lime by chemical attraction, which only takes place in proportion as the quantity of carbonic acid combined with the lime is diminiſhed; or, as chymiſts would expreſs

expreſs it, the more the lime is reduced to the ſtate of a ſubcarbonate. But, as this admits of almoſt infinite degrees, it is evident that a calculation of the proportion of lime in theſe ſtones, from their loſs of weight during the ſolution, muſt prove in the higheſt degree fallacious.

But, in addition to this radical cauſe of error, limeſtones, and eſpecially clay and ſhell-marls, are often alloyed with carbonate of iron and other metals, or with carbonate of clay and other earths. Now, as ſuch a proportion of muriatic acid muſt be put into the bottle as will be ſufficient to expel all the carbonic acid from the maſs, it is evident that what eſcapes from iron, clay, &c. cannot be diſtinguiſhed from what eſcaped from lime; and hence all the matters which yielded gas of any kind will appear to be lime in the calculation.

Sir George ſeems aware of the error ariſing from the muriatic acid carried off during the operation. This error cannot be reduced to calculation, becauſe it depends on the rapidity or ſlowneſs of the ſolution. Some calcareous bodies diſſolve with ſuch rapidity, that the carbonic acid gas eſcapes like an exploſion, carrying with it a great proportion of the acid, while others diſſolve more ſlowly.

In fact, Sir George, in his ſecond Eſſay, vol. 5. p. 269. ſeems to have abandoned this mode of analyſis, and to have had recourſe to one ſimilar to that here propoſed. It is not my intention to enter into any criticiſm on the different ſteps of his analyſis, as I have no doubt but it was conducted with all the ſcientific accuracy for which he is ſo much diſtinguiſhed.

Having ſeen this ſubject ſtarted, all I mean is to explain more fully what A. S. only hinted at, and to point out an eaſy proceſs by which a farmer may judge of the comparative value of limeſtone and other calcareous ſubſtances, by aſcertaining the proportion of fixed matters in the maſs which are not lime. I conceive this to be of very great importance: but with regard to aſcertaining the various proportions of the primitive earths or of metals which enter into the compoſition of limeſtone, this is a matter of too much intricacy for ordinary farmers, and to them of no practical utility.

Sir George ſeems to deprecate anonymous attacks, and to wiſh that every perſon who writes on this ſubject ſhould ſign his name. I am ſure I have not the ſmalleſt intention of attacking one for whom I entertain ſo much perſonal eſteem, and whoſe high attainments in the phyſical ſciences entitle him to ſo much reſpect; nor do I think Sir George will view any thing I have ſaid as an attack upon him. I ſhall be extremely happy to have

my own errors pointed out by Sir George; and, that he may not labour in the dark, I beg leave to subscribe myself

His and your obedient humble servant,

JAMES HEADRICK.

Edin. Nov. 1. 1804.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

The Question considered, Whether Magnesian Limestone is pernicious to Vegetation?

SIR,

DURING two or three years past I seldom returned to this city, from my laborious peregrinations through the Highlands and Isles, without having my ears perpetually stunned with violent invectives against the use of lime, which contains magnesia, as manure. Some zealous friends of mine (whose zeal exceeds their knowledge) suggested the propriety of analysing all the limestone quarries in their vicinage, and, if found to contain a particle of magnesia, proposed that they should be shut up by act of Parliament, and prevented from poisoning the crops in their neighbourhood.

In fact, among your agriculturists, the *magnesiæ-phobia* seems to be the order of the day: and they appear to be as much terrified at magnesia, as a helpless traveller, like me, is sometimes at mad dogs.

My peregrinations having precluded me from perusing any of the original publications which excited this magnesiæ-phobia, I beg leave to offer a few remarks on an Essay, signed TYRO, *Yorkshire*, 1804. Vol. v, p. 272.

As far as I can learn, the magnesiæ-phobia commenced in Yorkshire, and has spread by repeated undulations through the island, and has topsy-turvied stronger brains than mine.

1. The first remark I beg leave to make on this gentleman's Essay is, That he does not point out the state or combinations of the magnesia, which produces such dreadful effects. This question I have repeatedly put to several of my friends, who were visibly under the highest paroxysm of the magnesiæ-phobia; but, whether from ignorance, or from the disorder having reached their cranium, I never could draw from them any distinct answer. In one point only they all concurred, in expressing the greatest horror and alarm at magnesia coming within a hundred miles of their land; and some, when they learnt that this deletereous substance was capable of combinations, became still more alarmed lest it

it might be ſmuggled in upon them in a form which they had no means of detecting.

2. Your correſpondent TYRO not only omits ſpecifying the ſtate of the magneſia which proves ſo hurtful to land, viz. Whether it is pure carbonate, or with what acid it is combined, but alſo neglects to mention the mode by which the ſolution of the limeſtone is effected. All I am left to gather on this point is, that the ſolution was effected in a way ſimilar to that, the fallacy of which I have already pointed out in a preceding eſſay.

Whatever way his ſolution was effected, I can only ſay, that his *ammonia*, or *vol-alkali*, would throw down ſeveral other matters before it touched magneſia; and that his whole ſcheme of analyſis appears liable to objections. I might enter into particulars in order to eſtabliſh this aſſertion; but, not wiſhing to embark in any controverſies remote from practical utility, I ſhall content myſelf with ſhowing that magneſia, under certain combinations, is either harmleſs or beneficial to the growth of plants.

3. It muſt appear ſtrange to any man endowed with reaſon, that magneſia, which is evolved by the putrefaction and combuſtion of (I may venture to ſay) all animal and vegetable ſubſtances, ſhould operate as a poiſon to plants. How does this ſubſtance get into plants? doubtleſs by their roots. How does it get into animals? doubtleſs by feeding on plants which contain it? How does it get into animals which do not feed on plants? doubtleſs by devouring animals which feed on plants. The uſes of magneſia in the vegetable and animal economy are yet unknown; but that its uſes are great, may be inferred from this fact, that it always exiſts in both kingdoms, and often in conſiderable proportion.

4. I had long ago aſcertained that many ſtrata of limeſtone in Scotland, but eſpecially thoſe alloyed with clay, contained various proportions of magneſia. In theſe caſes I always found the magneſia to exiſt either in the ſtate of carbonate, or combined with ſulphur; and not unfrequently exiſting in both theſe ſtates in the ſame rock. When combined with ſulphur, it efflores̊ces into ſulphate of magneſia, which often forms a hoary incruſtation on the face of the rock. Yet the farmers, who uſed the lime of theſe rocks in great quantities, never entertained the ſmalleſt apprehenſion that it was injurious to vegetation.

5. I have analyſed various coal aſhes, and never failed to find in them ſulphate of magneſia, and ſometimes alſo ſubcarbonate of magneſia, both, not unfrequently, in conſiderable proportions. Yet coal aſhes are applied to certain ſoils with very good effect.

6. Lord Dundonald having ſtated, in his Eſſay on Manures,

that peat-ashes contained pot-ash, to which he ascribed their virtues as manure, I was led to analyse peat-ashes in various places from Ayrshire to Caithness, in the hope that those who used peat-fuel might be able to furnish pot-ash like those who burn wood. I never was able to detect a single particle of pot-ash in the ashes of peats; but I never failed to find sulphate of magnesia, and frequently the sulphate and subcarbonate in large proportions. Those peats which yield white ashes contain most of these ingredients. Now, peat-ashes are universally used as manure, and mosses are often pared and burnt for the express purpose of manuring them with their own ashes. An efflorescence of sulphate of magnesia is often seen on *moss binks*, that is, the face of mos from which people had been cutting peats.

7. In the Essay on Manures, referred to in my former communication, I described a species of schistus commonly known under the name of *blaes*, which effloresces into sulphate of magnesia by exposure to the air, and yields a considerable portion of sulphate and carbonate of magnesia from its ashes. I had observed three species of *schisti*, one containing sulphur combined with clay, which oxygenates into alum; another containing sulphur united to iron, which oxygenates into sulphate of iron; and the third contains sulphur united to magnesia, which oxygenates into sulphate of magnesia. Often all these three species are blended in the same mass; and I have had evidence of the hurtful effects of the aluminous and pyritical schistus, if laid upon land before the salts are extracted.

The magnesian schistus is commonly more hard and compact than the others, is of a dark blue or black colour, and very much resembles parrot or candle coal. I had once an opportunity of inspecting an experiment on a large scale with this schistus. Being set on fire by brushwood in very large heaps, it burnt with a smouldering flame, and left a great quantity of white ashes, such as the country people call *guests*. These were found to contain a very considerable proportion both of the sulphate and subcarbonate of magnesia. The ashes were laid upon the surface of land in pasture, and allowed to remain until the lumps mouldered down. When the land was ploughed, it yielded very extraordinary crops, and the effects seemed every way superior to those of a good liming.

I showed specimens of the sulphate of magnesia in fine crystals, and also of pure magnesia, to the late Dr Black, which were extracted both from the ashes, and from the efflorescence of this schistus, together with specimens of the materials from which they had been extracted; and that illustrious father of chemical science expressed an opinion that this schistus might be advantageously

tageously used for manufacturing the *magnesia alba* of the shops.

My ingenious friend, Dr Coventry, lately exhibited specimens of this schistus in his class, and mentioned that it was successfully used as a manure in some parts of Fifeshire.

I am aware that burnt clay operates on land as an alterative, and renders it more penetrable both by water and the roots of plants; and that the whole effect is not to be ascribed to the magnesia, or its salt. Lime operates both as an alterative, and as a direct manure. Being capable of combining with large dozes of carbonic acid and other compound gases, it retains these in the soil, and easily gives them over to the roots of plants; and being very soluble with an excess of carbonic acid, it may easily enter the plants along with it. I am inclined to think that magnesia always enters plants in union with some acid, because, in its pure state, it is insoluble in water. But, whatever be the mode by which it enters, it certainly does enter plants; and hence it makes part of their food, or is a manure. In the case under consideration, if we be not entitled to ascribe all the merit to the magnesia, or its combination with sulphuric acid, it must at least be admitted that the presence of these ingredients does no harm.

It is hardly necessary to mention, that the refuse of salt is often used as a manure. It seems now to be ascertained that marine salt contributes nothing to the nourishment of plants, those only excepted which grow in the sea. But the muriate and sulphate of magnesia, and other earthy salts, which abound in the refuse of sea-salt, certainly promote the growth of plants, and are hence applied as manures.

9. An ingenious friend of mine tried the pure magnesia of the apothecaries, and found that it neither did good nor harm to vegetables.

From all these facts I am warranted to conclude, that magnesia, in certain combinations, so far from being a poison, is a manure, or pabulum of plants; that, when pure, it is inert, doing neither good nor harm. If there be any combinations of magnesia which are hurtful to vegetation, it becomes those who have raised the cry against it to point out what these combinations are, or hold their tongues. It cannot be any state or combination of magnesia that has ever occurred to me in analysing limestones, or other substances used as manures; for, in all these cases, the presence of magnesia, instead of being hurtful, was apparently highly beneficial.—I remain,

Sir,

Your most obedient Servant,

Edin. Nov. 2. 1804. JAMES HEADRICK.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

Account of a Pump without a Piſton, invented about thirty years ago by George Jardine, blackſmith in Glaſgow.

SIR,

I beg leave, through the medium of your uſeful miſcellany, to reſcue from oblivion an invention, ſuited to various œcomenical purpoſes, of an ingenious mechanic in Glaſgow, called George Jardine by profeſſion a blackſmith, who died 27 or 30 years ago. I have formerly endeavoured, through various channels, to introduce it to public notice; but hitherto it appears not to have attracted that attention which it ſeems to me to have deſerved.

It is a pump operating through means of the weight of the atmoſphere, like the common piſton pump; but it has no piſton, and is thus calculated to avoid, in a great degree, the reſiſtance of friction. I had acceſs to ſee a model of it at work in the inventor's poſſeſſion, about 12 months previous to his death: he was then thinking of obtaining a patent for it. As the inſpection granted me was confidential, and as it ſeemed probable that Jardine's heirs might proſecute his intention of applying for a patent, I did not conſider myſelf at liberty to make public what I knew, till within a few years bygone.

I know nothing of deſigning, and cannot furniſh you with a drawing. I conceive, however, that a diſtinct notion of the machine may be readily conveyed to ſuch of your readers as poſſeſs the ſlighteſt knowledge of mechanics, by a mere verbal deſcription: more particularly as the principle, of which the inventor availed himſelf, is readily ſuggeſted from the name beſtowed by the inventor (*The bellows pump*), from its analogy to a machine with which every one is familiarly acquainted.

To conceive an idea, then, of the *bellows-pump*: Let us ſuppoſe an ordinary wooden pump-ſtalk extending to the height of 28 feet above the ſurface of the water of the well (that being the height to which the preſſure of the atmoſphere will always raiſe water, even at the loweſt ſtate of the mercury in the barometer); the top of this pump-ſtalk environed with a ſtrong circle of braſs, upon which is a male ſcrew: immediately within the top of the pump-ſtalk is placed the box, with its valve opening upwards, through which the water aſcends, when a *vacuum* is formed within the pump-ſtalk by the operation of the *bellows-head*, which falls next to be deſcribed.

Suppoſe, then, a larger kind of bellows, of which the under board

board is made of thick plank, the air hole of ſize ſufficient to admit of being lined with a circle of braſs with a female ſcrew, by which the bellows-head may be ſcrewed upon the top of the pump-ſtalk. The narrow end of the bellows is ſurrounded by a braſs ſcrew, upon which the ſpout or conduit for the water is ſcrewed. Within this narrow end is fixed a box, with a valve opening outwards; this box, in its outward face, may be cut in the ſlaunting direction of the line *a b* in the margin; ſo that the valve fixed at *a* may move, when impelled by the water from within the bellows, in the direction from *b* to *c*, and may fall down, by its own weight, upon the ſlaunting ſurface of the box.

To trace the operation: Let the bellows-head be ſcrewed upon the top of the pump-ſtalk, and the ſpout be alſo ſcrewed upon the narrow end of the bellows-head. When the upper board of the bellows is raiſed by its handle (as the external air cannot get admiſſion through the valve *a b*, juſt mentioned), a vacuum is formed within the pump-ſtalk, and the preſſure of the atmoſphere upon the water in the well forces the water up the pump-ſtalk, and into the bellows, the valve in the box at the top of the pump-ſtalk riſing up into the bellows-head. When the upper board of the bellows is preſſed down, the valve at top of the pump-ſtalk ſhuts, preventing the water in the bellows from returning down the pump-ſtalk; and the valve in the narrow end of the bellows opening outwards, the water is *forced* through the ſpout. I uſe the expreſſion *forced*, becauſe it is evident this pump poſſeſſes in it the principle of a *forcing-pump*, into which it is at once converted, by merely connecting to the ſpout the air-veſſel uſed in other forcing-pumps.

This pump would appear to get rid of all the friction of the piſton againſt the ſides of the box of the ſtalk of the common piſton pump. And there appears to be no re-action againſt the active force to counterbalance this advantage, excepting merely the reſiſtance ariſing from the unpliableneſs of the leather of the bellows, which, I ſhould ſuppoſe, would not be great after the leather becomes moiſt.

The bellows-pump (when acting merely by atmoſpheric preſſure) cannot indeed raiſe water, with certainty, above the height of 28 feet. If, however, the piſton pump raiſes it to a greater height, the exceſs of height of riſe is not effected by atmoſpheric preſſure, but at the expence of the acting force, in *carrying* a column of water, of the additional height, upon the top of the piſton: And, in the bellows-pump, it may be *forced* to the ſame height, at the very ſame expence to the active force (and that

without neceſſity of any air-veſſel), through a lengthened ſpout turned upwards, and carried to the ſame elevation.

As the pump-worker can apply more force in pulling the pump-handle *downwards* than in raiſing it *upwards*, it might be proper to give this favourable direction to his force by a compound lever, in working the bellows-pump as a common pump; in working it as a forcing-pump, he has the moſt favourable direction for the greateſt exertion required, from a ſtraight handle proceeding from the upper board of the bellows.

I might add, that the bellows-pump ſeems to poſſeſs the advantage of great facility of repair. If the bellows-head goes wrong, it can inſtantly be unſcrewed and replaced by a ſpare one: if a failure happens in either of the valves, by unſcrewing the head or the pipe, you have them immediately under your view.

I recollect, Sir, an incident, which Ruſſell, my old profeſſor of natural philoſophy in Edinburgh college, uſed to relate, to ſhow the neceſſity of information as to what the world was already in poſſeſſion of. It was of a country wright who came to him with an invention of his own, to conſult him how he might bring it to the beſt account: this invention was the contrivance of *caſter-wheels*, for beds or other furniture. The poor fellow was greatly aſtoniſhed and mortified, when he found that they had been ſo long known and in uſe, as to have become perfectly common. Though my own range of information is not very extenſive, I have nevertheleſs pretty ſtrong grounds to conclude, that Jardine's invention as yet remains untouched, and entire to himſelf. In all the varieties of pumps, and other contrivances for raiſing water, taken notice of in Walker's Lectures, publiſhed ſo late as 1802, I find no mention of any contrivance bearing the ſlighteſt analogy to Jardine's *bellows-pump*.

I am not ſure if leather would have ſufficient ſtrength to ſtand the ſtreſs neceſſary, if this pump were uſed to *force* water to any great height; though I have no doubt it might readily endure the inconſiderable ſtreſs applied to it, when the pump acts as a common pump, depending merely upon atmoſpheric preſſure for raiſing the water.

I ſhould imagine, that, in all caſes where water is not required to be raiſed above 28 feet, this pump might be uſed with great effect, in proportion to the active force applied; it might probably be peculiarly uſeful in ſhips.

If you account this worthy of inſertion in your uſeful and extenſively circulated miſcellany, I ſhould be happy if any of your correſpondents, more verſed in mechanics, would diſcuſs with you the merits of Jardine's invention: or, if you have ready acceſs to any perſon of this deſcription, I ſhould be glad that you would ſubmit

mit my manuſcript to their inſpection, and publiſh along with it their obſervations.

I am, Sir, your conſtant reader,

CHARLES FINDLATER.

Manſe of Newlands, 7th Aug. 1804.

NOTE BY THE CONDUCTOR.

We are extremely obliged to the Rev. Mr Findlater for the above communication, and truſt that ſome of our mechanical friends will favour us with remarks upon the practical utility of the invention therein deſcribed. So far as we are able to judge of its merits, the invention is ſimple and ingenious, and may prove highly beneficial to the community, by leſſening the toil of working pumps, as preſently conſtructed. We take this opportunity of ſtating, that every notification concerning improvements made on machinery, or on huſbandry implements, will be immediately inſerted in the FARMER'S MAGAZINE; no other publication in the iſland being ſo well calculated for diſſeminating information upon ſuch ſubjects.

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TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

On the Injury done to Potatoes by Worms.

SIR,

THE writer of this paper found himſelf diſappointed, on receiving laſt Number, that no notice was taken, neither by any correſpondent nor yourſelf, of 'a letter from a gentleman in Glaſgow,' in a preceding Number, concerning the total failure of his crop of potatoes, for two ſucceſſive years, by the Wire Worm *; and being ſimilarly circumſtanced this year in his own crop of potatoes, from the ſame cauſe, except on part of the ground that had, the preceding year, accidentally received a ſlight dreſſing of ſoot, obtained from a ſal ammoniac manufactory at 15d. per double horſe cart (having, at the time, no ſuch object in view as the deſtroying theſe inſects), on which part the potatoes were perfectly free from their ravages. The gentleman's land lies

* Muſeum Ruſticum. This inſect appears to belong to Order 7. Aptera of Linnæus. Genus not deſcribed.

lies near Glaſgow, where he, no doubt, can command this article; and as theſe vermin deſtroy the roots of corn, as well as potatoes, this hint may be of uſe to him and others, having no doubt that a ſmall quantity of ſoot, in its genuine ſtate, will prove more effectual, as, by the abſtraction of ſal ammoniac, it is rendered very weak. Thoſe inſects are greedily devoured by larks, wagtails, and many other ſmall birds; and, when a complete ſummer fallow is given, they are pretty clean picked by thoſe diligent gleaners. Paring and burning the turf, when the land is converted from graſs to arable, is a good general remedy. As theſe inſects prey upon roots at ſome depth in the ſoil, lime cannot be effectual, as it will have become effete before it reaches them.

Your's, &c.

Newcaſtle, 30th November, 1804. ALKALI.

NOTE BY THE CONDUCTOR.

WE are clearly of opinion that a complete ſummer fallow, provided the weather is dry when the reſpective operations are performed, will, almoſt in every caſe, deſtroy the wire-worm. Paring and burning will, no doubt, prove equally efficacious, but this can only be done with old graſs land.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

Letter from Sir George S. Mackenzie, Bart. on the Analyſis of Limeſtone, and on the Value of Labour.

SIR,

IN reply to Mr Low of Annfield, I ſhall ſhortly remark, that I never entertained a doubt but that there was limeſtone as pure as that deſcribed by A. S., Mr Low, and Mr Headrick; although I muſt expreſs my ſatisfaction at the very great accuracy diſplayed by the latter gentleman in the art of analyſis, as, in examining the limeſtone in queſtion, it appears he did not loſe *one atom*. Mr Headrick, being a chymiſt, will not deſpiſe *minuteneſs*; and it ſurpriſes me, that when Mr Low has ſo ſkilful a perſon to aſſiſt him, that *he* ſhould deſpiſe it.

I wait for Mr Headrick's eſſay, promiſed in your laſt notices, before I make any remarks on his letter ſent to you by Mr Low, which certainly ſatisfies me as to the extreme purity of the limeſtone, but does not in reſpect to the *alloy* or *refuſe*, as it is called. *Fine clay* and *ſand* are expreſſions inadmiſſible in a chemical

chemical proceſs, and in his eſſay, I am pretty ſure, Mr Headrick will not uſe them. I ſhall be more particular in my remarks hereafter.

To a candid mind, the acknowledgment of error, when ſatisfactorily convinced, muſt neceſſarily prove a grateful duty. Be ſo good, therefore, as allow me to ſtate, that after conſidering, with much attention, my letters in your Magazine on the value of labour, and that of Pol-Œconomicus, vol. v. p. 251, together with your notes, I perceive I have been miſled by commonplace notions on that important ſubject; and that Pol-Œconomicus and you are in the right. When making this acknowledgment, it gives me pleaſure to add, that I have gained, by the diſcuſſion, exactly what I promiſed to myſelf in correſponding with your Magazine. I ſtarted a queſtion on which different opinions confeſſedly prevail, and thereby brought forward a reply which cannot fail to have much influence with thoſe who think as I did on the very important ſubject which was under conſideration. I am, Sir, reſpectfully,

Your moſt obedient humble ſervant,

GEORGE S. MACKENZIE.

Coul, 19th December, 1804.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

Farther Conſiderations on the Value of Labour in the Highlands, with Remarks on Sir George S. Mackenzie's Letter on that Subject.

SIR,

THE ſame reaſons which induced me, on a former occaſion, to trouble you with the "*Conſiderations on Labour*," which have been ſo fortunate as to meet with the approbation of your correſpondents, led me alſo to promiſe the communication of a few thoughts on the probable influence of the operations then about to be commenced by Government on the grand Caledonian Canal; in meliorating the condition of the Highlanders, and giving a ſtimulus to thoſe improvements which, it is admitted on all hands, their country requires. Circumſtances prevented, at that time, my making ſuch a communication, and I am happy to find, by Sir George Mackenzie's letter in your laſt number, that it would be now unneceſſary, as the commencement of operations on the canal (which, he aſſures us, is going on with great rapidity), and an actual experience of

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the conſequences with which they are attended, have diſſipated the gloom with which he contemplated that national object, and have convinced him that it will neither prove an obſtacle to improvement, nor be attended with thoſe "*ruinous effects*" which he formerly apprehended.

It is indeed ſomewhat ſurpriſing that the Baronet did not immediately perceive the extreme improbability of Government contractors being diſpoſed to offer extravagant wages to induce labourers to engage in that work, when the principal and moſt preſſing Parliamentary reaſon for putting it in immediate execution, was the employment which it would afford to thoſe ſhoals of ſtarving Highlanders, who, from want of occupation in their own country, were annually emigrating to another; or that thoſe wretched individuals, who are in the yearly cuſtom of travelling above one hundred miles to earn only 10d. or 1s. *per diem* in the Lowland harveſt, and who were repreſented as rejoicing in the proſpect of receiving any wages whatever, ſhould "actually leave, or threaten to leave," the canal, if the ſuperintendants did not ſatisfy their exorbitant demands; when, beſides receiving wages equivalent to the average price of the country, the reward of this labour was virtually increaſed, by the certainty with which they could look forward to conſtant employment.

This was an anticipation which, combined with the "conſiderations on labour," Sir George Mackenzie may be aſſured required no great intellectual labour, no cloſet ſpeculation, but which mere common ſenſe, acquainted with generally received and undiſputed facts, was fully adequate to form; which, ſo far from being the reſult of a theoretical ſpeculation, aroſe from an application of the plaineſt and ſimpleſt principles of political economy; principles which are as applicable to the Highlands as to the Lowlands—to Scotland as to England—and to the Continent of Europe as to the iſland of Great Britain. This, however, the Baronet does not ſeem to be fully ſenſible of, as, in his laſt letter to you, he obſerves, 'That Ayrſhire is at *ſo great a diſtance*, that he cannot ſuppoſe how a political economiſt there can render uſeful his ſpeculations on the condition of the North Highlands!'

Had this obſervation been made ſome centuries ago, it might probably have paſſed as an ingenious objection; but, to bring it forward in the light of 1804, is like oppoſing the caſque and the ſhield to the canon. At ſuch a period as the preſent, when communication is eſtabliſhed between every part of the kingdom; when the political union of north and ſouth has been ſucceeded by a *real* intercourſe of their reſpective inhabitants; when, from the patriotic labours of Sir John and the parſons, the hiſtory and *memorabilia*, both ancient and modern, of every Highland pariſh have

have been collected with ſuch care, and detailed with ſuch ſcrupulous fidelity, that not a mouldy halfpenny or diſfigured mileſtone is deprived of a niche in the temple of Statiſtry; and when, moreover, in this very Magazine, quarterly reports of the ſtate of every county appear as regularly as the morning bulletins of a phyſician royal; it ſurely ought not to ſurpriſe *even* a Highlander, that a Lowlander ſhould know a little about the north country, particularly if the latter was to whiſper in his ear, that what little he did know was really gathered upon the ſpot.

Sir George, however, while he cannot deny that the circumſtances mentioned in the 'conſiderations,' as occaſioning a riſe in the price of labour, are fully adequate to produce ſuch an effect, tries to evade their force, in the preſent argument, by diſputing their exiſtence in the Highlands. Now, in order to fathom the depth of this evaſion, we muſt heave the lead to a little diſtance.

In his letter to you of the 20th December 1803, which, like original ſin, has been the parent of all the ſubſequent evil, Sir George complained, in the firſt place, of the riſe of labour in the Highlands, ſo great as to incline him to deſiſt from improving altogether; conjectured, in the ſecond place, that this was to be attributed to the combination of the workmen; and propoſed, in the third place, that this evil ſhould be remedied by a forcible depreſſion of the rate of labour, by means of a counter combination of the country gentlemen. In anſwer to this, it was attempted to be ſhown, in the 'conſiderations' inſerted in your 18th Number, that the combination of country workmen was a circumſtance as unlikely as unheard of, and that there was really no occaſion to ſuppoſe its exiſtence in this inſtance, as the riſe of wages, if general, could be traced to other cauſes; partly to certain local circumſtances, but chiefly to the general improvements which are in execution and in agitation, and which conſtitute the moſt deciſive marks of the proſperity of the country.

Can Sir George Mackenzie deny that ſuch improvements have been and are now rapidly proceeding? Is not he, and every Highland proprietor, who is ſenſible of his own intereſt, and deſirous to promote it, encloſing, building, and improving, and thus raiſing the value of his lands? And has he not actually been complaining of the expence of ſo doing? How then can he affirm that none of the cauſes ſtated by Pol-Œconomicus, as raiſing the price of labour, do exiſt in the Highlands? He himſelf affords a ſtriking example of the chief cauſe. His very actions contradict his aſſertions.

Wherever new improvements are commenced, and new labours carried on, there muſt ariſe a new demand for workmen and

and artificers; and, wherever a new demand ariſes, a competition among the employers muſt enſue; a riſe in wages muſt follow. Theſe conſequences are as neceſſarily connected with each other as any of thoſe ſucceſſive events whoſe connexion is ſuſceptible of mathematical demonſtration. Labourers, to engage with new employers, muſt be tempted firſt to leave their old ones, and they can only be tempted to do ſo by receiving a more liberal reward for their exertions. Employers will not offer that reward without expecting to have it returned with an increaſed profit to themſelves: therefore, in this caſe, the intereſt of employer and labourer are preciſely the ſame, and it is owing to an inattention to this ſimple truth, to a miſunderſtanding of the relation which exiſts between the two claſſes, and to a ſuppoſition that their reſpective intereſts are hoſtile, and at variance with one another, that much jealouſy prevails, much enmity exiſts between them. But let it be underſtood, let it be remembered, let it be reflected on, that they are identical, the ſame; that what invigorates the labourer gives ſtrength to the farmer; what debilitates the one is enervating to the other; that as the hand is to the mouth, or the belly to the members, ſo are they mutually and reſpectively to each other; and that, whatever be the prejudices which create malevolence between them, prejudices which are much to be regretted and lamented, they muſt flouriſh or decay, muſt ſtand or fall together. It is for the intereſt of the labourer that the farmer ſhould profit on the produce of his labour, becauſe he can then employ him more conſtantly, pay him better for his labour, and, by increaſing the product, thus diminiſh the price of the proviſions which are neceſſary for his ſupport and ſubſiſtence. It is, on the other hand, the fundamental intereſt of the farmer, that the labourer ſhould be liberally rewarded, becauſe he can then afford to conſume more proviſion, and to pay the farmer a better price for his produce. The better the lower claſſes are paid for their labour, therefore, the greater will be the profits of the farmer, ſince it is only by receiving high wages that they can afford to live better. For it is an undeniable truth, that it is to the conſumption of the *poor*, not of the *rich*, that the farmer muſt look for encouragement. The latter form a very ſmall part of the community, and any change in their mode of ſubſiſtence is comparatively of trivial import. "That claſs of dependent penſioners, called the rich (ſays Mr Burke), is ſo extremely ſmall, that if all their throats were cut, and a diſtribution made of all they conſume in a year, it would not give a bit of bread and cheeſe for one night's ſupper to thoſe who labour, and who in reality feed both the penſioners and themſelves." But the leaſt variation in the income of that claſs which

which conſtitutes the great body of the people, is attended with diſtreſs of the moſt alarming magnitude, or with benefit of the moſt extenſive importance; and while a depreſſion in the rate of labour would cramp the exertions of the farmer, the ſmalleſt riſe, on the other hand, were it only ſufficient to enable the labourer to eat an additional pennyworth of bread per day, would give an incalculable ſtimulus to agricultural operations, and occaſion the cultivation of a multitude of acres.

The preceding obſervations apply to labour in general, and may tend perhaps to obviate ſome prejudices, which, it is to be hoped, will be ſpeedily removed. But, beſides the great cauſe of high wages here pointed out, there are a number of ſecondary circumſtances which have a ſimilar tendency, ſeveral of which were mentioned, in the 'Conſiderations,' as having contributed, particularly in the caſe of ſkilled labour, to occaſion that riſe in the demands of maſons, which was aſſerted by Sir George as a fact, and lamented as an evil. The Baronet, however, roundly denies the exiſtence of thoſe circumſtances in the Highlands, and obſerves that he, "Pol-Œconomicus, may perhaps believe this when he has read the following caſe which happened to myſelf." He then entertains us with a ſtory of two maſons, which, ſo far, however, from being calculated to make converts to his doctrine, is in itſelf the moſt powerful opponent that can be advanced againſt it. Sir George, indeed, is as ſingularly unhappy in his facts, as unfortunate in his arguments. For what are the reaſonable inferences which are to be drawn from this anecdote, but that

1*ſt*, The Baronet raſhly conſidered, and complained of as *general*, over the whole Highlands, an exorbitance of demand in workmen, which was peculiar to his own caſe; and imagined to be the effect of a general combination among maſons, what, in fact, reſulted from the particular greed of his own *hereditary* builder. That the extravagance of demand complained of was not general, that no combination exiſted, is evident from the conſequence which, he informs us, enſued; that competition immediately operated, that a new workman ſtepped in, and undertook to do the work at one third leſs than was demanded by the old one. But,

2*d*, Sir George Mackenzie had no reaſon to complain of the extravagant demand of three guineas per rood in this inſtance. He himſelf was the cauſe of it; it aroſe upon his own miſmanagement, and he cuts the knot at once, when he informs us, that this family-maſon "was ſo far ſatisfied with the proſpects he had, that he aſked a ſmall farm, which I gave him." Now, this was certainly a retrograde motion in improvement, oppoſing what every one ſhould be deſirous to advance, and confounding what every good politician has endeavoured to ſeparate.

No

No man who wiſhes to have the work of any trade *well* done, and *cheaply* done, would think of confounding two crafts together. This object can only be attained by the diviſion of trades, which, as was formerly obſerved, "cheapens labour by rendering it more perfect, and augments its powers by ſimplifying its proceſs." Sir George might as well expect to have his beard cheaper ſhaved, or his back better bliſtered, by reviving the obſolete, though once honourable, profeſſion of *barber-ſurgeon*, as to have his fields better ploughed or his walls cheaper plaiſtered, by continuing the barbarous handicraft of *farmer-maſon*. The fact is, that inſtead of ſuch being the conſequence, higher wages and bungling artiſans would be the indubitable reſult. Adam Smith obſerves, "That a country weaver, who cultivates a ſmall farm, muſt loſe a good deal of time in paſſing from his loom to the field, and from the field to his loom. When two trades are to be carried on in the ſame workhouſe, the loſs of time is no doubt much leſs. It is, even in this caſe, however, very conſiderable." What then muſt it be in the caſe of a farmer-maſon? Now with the hoe, then with the hammer; here with the plumb, there with the ploughſhare; to-day in mud, to-morrow in mortar; and whoſe trades, ſo far from being carried on in the ſame workſhop, are generally at miles diſtance; and one of them, indeed, of ſo unſettled a diſpoſition, as to be changing place almoſt every fortnight, not only requiring the humble attendance of its votary, but alſo the removal of his whole ſtock of implements and accompaniments, and not unfrequently even of his houſehold gods.

To compenſate for the great loſs of time which muſt thus have unavoidably enſued, we cannot be ſurpriſed that the poor maſon ſhould have demanded from Sir George an additional guinea *per* rood for his labour, having, perhaps, a greater taſte for enjoying his uſual meſs of porridge, than for reliſhing the beauties of nature, which, Sir George Mackenzie informs us, he had ſo fine an opportunity of doing, in taking his "agreeable morning-walk through the *fertile fields* and *living haunts*" of Coul.

But Sir George further argues, that inconſtancy of employment, in this inſtance, could not be the cauſe of the riſe of demand, becauſe he himſelf would have kept the man in full work, and adds, "that the maſon was ſo far *ſatisfied* with his proſpects that he aſked a farm;" though, from the latter circumſtance, it would rather ſeem that he was not quite *ſatisfied* with the proſpects of his trade, or he would never ſurely have thought of giving up the trowel for the ſpade, and of combining the trade of a farmer with the profeſſion of a builder. The man ſeemed rather to be ſenſible of the impropriety of ſuch a combination, and, by making

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an extravagant demand as a maſon, took a modeſt way of acquainting his maſter of his having now become a farmer. So much for the maſonic epiſode. But, ſetting aſide altogether the conſideration of this illuſtration, it muſt be obſerved, that a general concluſion is not to be drawn from a particular circumſtance; nor is it to be ſet down as an indiſputed truth, that the labour of the country is as conſtant as that of the towns, becauſe a Highland laird offered full employment to his maſon. The reverſe has been eſtabliſhed by general obſervation, and ſeveral of the circumſtances which occaſioned it were formerly mentioned; among which, the greater number of idle days which muſt occur in the Highlands, ariſing from *foul weather*, and want of protection from it, was mentioned upon high authority. Your correſpondent, however, flatly denies the exiſtence of ſuch cauſes; a circumſtance which muſt certainly give conſiderable pleaſure to your readers, although it cannot but be conſidered as a miraculous interpoſition of providence, which has thus altered the nature of things, and ſoftened the aſperity of climate, in ſupport of the argument of Sir George Mackenzie!

Your correſpondent aſks if Pol-Œconomicus can blame him for not giving three guineas *per* rood, when he can get the work executed for two? Far from it, he would adviſe Sir George always to employ thoſe workmen who execute their work in the beſt manner, and at the cheapeſt rate; but if, as Sir George aſſerted, the riſe in the price of labour was general in the Highlands, it certainly would be wretched policy in him to diſcard all his labourers on that account; to let his tenants lie without houſes, and his lands without improvement, when that very riſe was to enſure him a better rent from the one, and a larger profit from the other.

Againſt the *improbability*, nay almoſt *impoſſibility*, of a combination among country labourers, which was formerly pointed out, an argument is not even attempted by the Baronet; he contents himſelf with a fact, as uſual; aſſerting, that "the workmen did poſitively ſettle that they would demand an increaſe of wages." In this aſſertion Sir George ſpeaks in a much lower tone, and carefully avoids the term *combination*; keeping which out of view, he attributes no more to the Highland labourers, than what is fairly, openly, and daily practiſed by every vender of a marketable commodity. By a natural ſettlement, a tacit convention, all ſellers agree to raiſe the value of their wares. Into what market can you go, that you do not obſerve a fluctuation, a higgling take place, before the average price is determined, before the actual value of the commodity is offered on the one hand, and accepted on the other. For the purchaſers as

naturally agree to offer leſs than the juſt value, as the venders ſettle to demand more; yet before a compromiſe takes place, the former are as ſure to offer more, as the latter are to accept leſs; and before the concluſion of the market, the true value of the commodity is fixed, by the feelings, wants and inclinations of the reſpective parties, with a degree of delicacy, truth, and minuteneſs, far ſuperior to what could poſſibly be eſtabliſhed by any judicial authority or arbitrary eſtimation. But it would be abſurd to attribute, in this caſe, to a ſyſtematic combination, what naturally ariſes from the intereſted motives of mankind; and it would be ſupererogation, on our part, to attempt to check, by legiſlative proviſion, or by any regulation whatever, what is effectually counteracted by the ſame motives which occaſioned it,—by the feeling of particular wants, and the ſenſe of individual intereſts. Preciſely in the ſame light as we view the tranſactions of the vender and the purchaſer, are we to conſider the intercourſe of the labourer and his employer. Labour is as much a marketable commodity as any other article of traffic; its transference is ſubject to exactly the ſame rules, its value is regulated by the ſame circumſtances, and its price is ſubject to ſimilar fluctuations. As you, Sir, have very properly obſerved in your note on Sir George Mackenzie's letter, it is the demand for the article, and the quantity which is preſented to ſupply that demand, which regulates the price of every commodity in the market, and of labour among the reſt. The workman who, in expoſing a quantity of labour to ſale, demands a price for it beyond its real value, is puniſhed exactly in the ſame way as the ſhopkeeper who aſks more for his goods than the cuſtomary price, *i. e.* by the deſertion of his cuſtomers. On the other hand, he who offers to work for ſmaller wages than his brethren, is rewarded in the ſame way as the ſhopman who ſells his wares at leſs than the common price, *i. e.* by the acquiſition of new cuſtomers, and an increaſed ſale of his commodity. Sir George, indeed, exemplifies this in his maſonic anecdote. But the ſellers of goods, as well as the ſellers of labour, participate in that univerſal inclination, to make as much of their commodity as they poſſibly can, and generally demand a higher price for their article than they are ultimately willing to accept. The ſame thing takes place in all other trades; and if, therefore, by 'the workmen *ſettling to demand more for their commodity*,' Sir George means that they determined to get as high wages as they could, he will perceive that no particular blame can attach itſelf to them on that account. If, however, on the other hand, he means by this expreſſion to maintain his former aſſertion, that an illicit combination (in the legal acceptation of the word) did actually exiſt among the Highland

Highland labourers, he cannot but regard his anecdote of the maſons as unfortunate, ſince it not only ſhows the improbability of the fact, but alſo the inutility of that remedy which, admitting the evil to have exiſted, Sir George had preſcribed for its removal. To prove this, was in ſome degree the object of my former communication; but as Sir George Mackenzie, in his laſt letter, profeſſes an averſion to abſtract reaſoning, a ſimple and obvious illuſtration may perhaps be more acceptable.

Suppoſe that the dealers who ſupply a large and populous town with proviſions of any ſort—ſay fiſh—were ſo ill adviſed as to form a combination, and, without any cauſe, were to raiſe the price of that article to an immoderate and extravagant rate. What would be the conſequence? In the *firſt* place—ſuppoſing that this combination might be continued for ſome time; it is evident that the trade would be conſiderably diminiſhed, and that the majority of thoſe who were in the practice of conſuming that article would refrain from that indulgence, and reſtrict themſelves to a more reaſonable, though equally nutritive diet; by which means, even at the monopoly price, the fiſhmongers would gain very little, nay moſt probably loſe by the meaſure, as it is an undoubted fact, that the gain of all tradeſmen is greater when the article is cheap and the ſale extenſive, than when prices are high and the vent proportionally ſmall.

But, in the *ſecond* place, ſuch a combination could *not exiſt* beyond a day, becauſe, as there was no real ſcarcity, and as the ſale was ſo conſiderably diminiſhed, a great ſurplus would remain in the hands of the fiſh-dealers, which ſurplus, being of a periſhable commodity, could neither be ſtocked nor ſtored up, and muſt neceſſarily be ſold to prevent a very great loſs; in conſequence of which, the combination would be receded from, and a competition would inſtantly ariſe. That ſuch muſt be the conſequence, is evident alſo from another conſideration. Every combination ſuppoſes the exiſtence of conſiderable funds in the hands of individuals, to enable them to ſtand away from the market, ſo that the prices may riſe. But the majority of dealers, in moſt trades, is of thoſe whoſe capitals are ſmall or moderate. Now, although the larger capitaliſts might ſupport a combination ſucceſsfully for ſome time, if they alone poſſeſſed the market, by holding away from it, which they could afford to do from the extent of their funds, yet this they are unable to do, ſo long as the ſmaller but more numerous capitaliſts participate the market, who, from the weakneſs of their funds, are unable to withhold their goods from ſale a ſingle day, without the proſpect of bankruptcy and ruin, becauſe, upon its being turned, they depend for their ſubſiſtence. Thus, a trader who daily turns a capital of 20l., can ſupport for a time a diminution of ſale,

equivalent to a reduction of profit from ten to five *per cent.*, becauſe he can, without difficulty, manage to live upon twenty ſhillings *per diem*; but a dealer who, like the majority of thoſe who in large towns ſupply the bulk of the inhabitants with freſh proviſion, many of whom, we are aſſured, turn only a capital of one, two, or three pounds *per* day, cannot poſſibly ſtand away from the market, or ſupport a ſimilar diminution of ſale, becauſe they cannot ſupport their families on one, two, or three ſhillings only *per* day. Hence, it is obvious that the dread of combination among thoſe who ſupply the people with freſh proviſion, is quite unfounded and unreaſonable, as long as the preceding circumſtances exiſt, the trade being diſperſed among ſo many hands, and carried on upon ſuch ſmall and unequal capitals. How much more imaginary, then, muſt be the idea of combination among country labourers, when the ſame circumſtances exiſt in the latter caſe more unexceptionably than in the former, and when the ſame reaſoning which has been uſed in the one, may be employed with infinitely more force in the other! If conſumable commodities, ſuch as have been pointed out, are of ſuch a periſhable nature that they do not admit of being ſtocked or ſtored up, and thus withheld from the market, what reaſon have we to dread that labour can be withheld to anſwer the purpoſe of combination, when it is infinitely more periſhable in its nature? The vender of the former, in ſupporting a combination, ſuffers only a partial loſs by his proviſion becoming ſpoiled; but the vender of labour, in ſupporting a ſimilar meaſure, ſuſtains a total loſs of his commodity. The workman, unemployed, is the moſt unfortunate of all traders; for idleneſs, like abortion, deſtroys the fruits of his labour before even they are in exiſtence.

But again—If it is impoſſible for thoſe who have only ſmall capitals to ſupport a combination effectually, how is it poſſible for labourers to do ſo, who depend on to-day for the ſubſiſtence of to-morrow, and who, if they refrain from labour, muſt inevitably ſtarve?

Theſe conſiderations are plain and obvious; it is ſurpriſing indeed that they ſhould be ſo eaſily overlooked; and they certainly are adequate to prove that the combination of country labourers is one of the moſt improbable occurrences, which the fancy of man can imagine; far more unlikely indeed than the combination of the venders of conſumable and periſhable commodities, which, according to political writers, is one of the moſt unlikely caſes of combination, and the leaſt to be apprehended. They alſo ſhow, that, admitting the exiſtence of ſuch aſſociations, there is no occaſion for law to counteract them; that Sir George's propoſal of the interference of the country gentlemen

gentlemen to oppoſe them would be quite unneceſſary, as they fall moſt ſpeedily when left to their own natural imbecility, and bear in their own boſoms the ſeeds of their decay.

Although perhaps treſpaſſing too much on your patience, I cannot allow to paſs unnoticed, another propoſition advanced by Sir George Mackenzie, equally erroneous with thoſe I have already diſputed, viz. that the intereſt of the maſter builders or employers is connected with extravagance of wages, and that 'they derive larger profits when wages are high, than when they are low.'

That the real fact is directly the oppoſite of this opinion, Sir George may reſt aſſured. Competition takes place among this claſs of men, as well as among thoſe to whom they give employment; they are no more exempted from wants and neceſſities than any other order of their fellow creatures; and a more perfect acquaintance with them, will convince the Baronet, that theſe wants and neceſſities will impel the majority of their number to reduce their profits to the *loweſt poſſible* rate, conſiſtent with a comfortable ſubſiſtence, and with the dictates of humanity. So far, indeed, from increaſing their profits, extravagant wages rather diminiſh their employment, by giving a check to thoſe operations, a principal motive to which is the capability of executing them at a reaſonable rate. Such an opinion (Sir George muſt pardon me for aſſerting) ſeems to partake more of the ſpirit of vulgar prejudice and of raſh conjecture, than of liberal thinking, or of deep reflection, and can only be compared with that popular prejudice which conſiders the intereſt of the farmer as being intimately allied to the extravagant prices of years of ſcarcity; a prejudice which, however general it may be, is as unjuſt as it is unfounded.

Your correſpondent alſo preſſes on the notice of Pol-Economicus, the appeal of Highland workmen to the price of proviſions, as the ſtandard by which they regulate the value of their labour; and anxiouſly requeſts him not to overlook, what otherwiſe he ſhould have been diſpoſed to diſregard, as much as their appeal to the ſecond ſight as a proof of ſupernatural communication; conſidering both as the reſults of the falſe aſſociations and caſual conjunctions of ſuperſtitious theory and miſtaken ignorance. The vulgar and uninſtructed apprehenſion is always eſtabliſhing connexions between events which have in fact little or no relation to each other; a conſequence proceeding from the exerciſe of one of the moſt active powers of the mind, when allowed to operate without the direction of reaſon, or under the influence of partial and intereſted conſiderations. It is certainly true, that workmen do frequently urge the *hardneſs of the times*, as a mean of procuring a more liberal reward; but

they only appeal to this, as to one of the moſt plauſible pretences by which they may attain the object of their deſire; it is one of the mercantile tricks, by which they endeavour to ſet off their commodity to the greateſt advantage. It is not true, however, as Sir George aſſerts, that they uniformly appeal to the price of proviſions as the *ſtandard* by which they wiſh their wages to be regulated. They entirely depart from it in years of plenty, when their wages greatly exceed the value of the neceſſaries of life, and nothing would diſpleaſe them more than the idea of appealing to ſuch a ſtandard. In this caſe, the imaginary ſcale becomes the hobby of the employer; he mounts into the ſaddle, which was the ſeat of the labourer in years of ſcarcity; he employs the tricks of the buyer to depreciate the value of the commodity he wiſhes to purchaſe; he remonſtrates with the labourers on the extravagance of demanding the ſame wages, when proviſions are only one half of their former price. But the labourers are as deaf to his reaſoning in plenty, as he was to theirs in times of ſcarcity; and although the ſtandard is employed alternately by either party, according to the oſcillation of intereſt, in dearth or in abundance, yet we find, in fact, that it is a mere ſtalking-horſe, by which the parties ſtrive to approach their reſpective objects, but which has really little effect in promoting the end of either the one or the other. The influence of a riſe in the price of proviſions indeed, on the value of labour, contrary to what is commonly ſuppoſed, is to produce a fall inſtead of an elevation, by bringing, as you have obſerved, more labour into the market.

In confirmation of this reaſoning, many examples might be adduced, ſhewing that ſo far from the price of proviſions being the natural ſtandard of the rate of labour, elevating, or depreſſing it according to its own correſpondent fluctuations, a contrary effect is generally produced. It will however be ſufficient for our purpoſe, to refer to the continent of America on the one hand, and to the Chineſe empire on the other. In the former, proviſions are abundant, and ſubſiſtence exceedingly cheap, but labour is extravagantly dear; in the latter, the rate of wages is uncommonly low, while the difficulty of procuring food is ſo great and diſtreſſing, that to prevent the evils of famine, infanticide is authoriſed by law, and practiſed by the parent.

With regard to the queſtion, how far it would be conſiſtent with good policy and humanity to regulate the wages of the labourer by the price of proviſions; or, what is the ſame thing, to convert his reward from money into ſubſiſtence; it is not my intention to interfere at preſent. It is a ſubject which requires conſiderable inveſtigation, and which, as far as I know, has never been

been the ſubject of complete diſcuſſion. From the little thought which I have beſtowed on it, however, ſuch a meaſure appears to me to be fraught with numerous evils and inſurmountable inconveniences, of which, granting the poſſibility of accompliſhing the object, it may be ſufficient at preſent to mention this inevitable reſult,—That while, in ſeaſons of ſcarcity, famine can only be prevented by a proportional diminution in individual conſumption (a patriotic privation which the urgent law of neceſſity impoſes as a duty upon every member of the ſtate), the labourer alone would be exempted from ſuch an obligation; his income would be highly augmented; his deſires would be deprived of no gratification; and while the cravings of hunger emaciated every countenance but his own, his cheek would be flushed with the fulneſs of plenty; and becauſe he found his intereſt to be intimately connected with the change, he would glory and rejoice in the diſtreſſes of his fellow-creatures.

It is with no ſmall degree of regret, that from an unalienable attention to other avocations, Pol-Economicus is under the neceſſity of declining the polite invitation to inſtruct Sir George Mackenzie in the principles of an important ſcience, by privately communicating with him upon the ſubject; and that regret which muſt naturally ariſe from being obliged to decline ſo honourable an employment as the inſtruction of a Highland baronet, is not a little augmented, by an anticipation of the aptneſs and ability of the pupil, and conſequently of the eaſineſs and pleaſure of the taſk; for Sir George has confeſſed, in his laſt communication to you, that he is already beginning 'to be *more* of the opinion that the value of labour ſhould be left to find its own level, becauſe he has begun to experience that it *will* find its own level.' Experience is certainly a moſt excellent ground for a change of opinion; and, though an expenſive, it is truly a moſt convincing ſchool. As Sir George has by its means *nearly* attained the poſſeſſion of an *eſtabliſhed* truth, it is highly probable that, by perſevering in the ſame courſe, he may in good time acquire a knowledge of the coarſer principles of political economy; a knowledge, to which thoſe muſt be contented to attain, by diligent ſtudy and by deep reflection, who are not ſo fortunate as to poſſeſs ſimilar means of expounding ſuch truths, by the more entertaining medium of artificers and experiment.

Pol-Economicus muſt confeſs himſelf to have been not a little aſtoniſhed, that any expreſſion in thoſe 'conſiderations' with which he formerly troubled you, could be conſtrued by your correſpondent into a mark of contempt of ſo valuable a body of patriots as the Highland proprietors, or of ſo reſpectable an individual as Sir George Mackenzie of Coul, Baronet. After reperuſing thoſe 'conſiderations,' he is indeed unable to

fix upon any sentence which intimates such a thought, or can justify such an accusation; and he can assure the Baronet it was far from his intention. Equally remote from his mind was any idea of making the animadversion on your correspondent's letters, a general censure on Highland gentlemen; he never suspected, and indeed would be sorry to suppose, that they supported the opinions expressed in those communications. If, however, any thing like contempt can be discovered in the 'considerations,' it is a contempt in which he will be seconded by all enlightened men; a contempt of erroneous and illiberal principles, which it is heartily to be desired were entirely exploded. But it is a contempt of principles alone;—he applies it to no individual; if any one appropriates it to himself,

'Let the galled jade wince!'

Trusting that the length of this letter will be excused by you and your readers, I remain, &c. &c. POL-ECONOMICUS.

Ayrshire, 1st December, 1804.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

Remarks on the Feeding Byre described in No. XIX.

SIR,

I have considered with attention the plan of a feeding byre described in the 19th Number of the Farmer's Magazine (vol. 5th, p. 300), with the strictures made upon the one built at Eskmount, described in a former Number, and in consequence hand you a few remarks on each.

I beg to remark in the outset, that it was not proposed, in the description of the Eskmount byre, to give a plan of *the cheapest byre that might be erected*; the object proposed was merely to exhibit a very clean and comfortable kind of feeding byre, where the dung and urine of the cattle could be collected in the most complete manner, and with the smallest trouble; and where the turnips, straw and litter used for the byre, could be preserved in the most effectual way, and at the same time furnished at the byre, with the least trouble to men and horses; provided all these objects could be accomplished '*in a manner not unusually or unnecessarily expensive.*'

Now, Sir, with submission, the author of the plan of the Roxburghshire byre, seems entirely to overlook these important matters; nor can I see in what respect his plan is one whit better than any common cow byre; and in fact, I apprehend it will turn out to be both less cleanly, and less wholesome. I shall therefore now attempt to state, shortly, the different reasons from which it appears to me that the Roxburghshire byre is greatly inferior, in every way, to that at Eskmount.

1st,

1*ſt*, It cannot be ſo eaſily dunged and kept clean, and indeed, in one part (the central ſpace marked C on the plan), it ſeems to be nearly impoſſible to remove the dung; certainly not without great difficulty at leaſt, and even danger. For, on each ſide of this ſpace, there are two rows of cattle, ſtanding with their tails towards each other, with a ſpace of *four feet only* between them; Query, How is this place to be cleaned out? And muſt not the perſon who attempts it, be every now and then whiſked by the tails of the two rows of cattle, and not unfrequently get kicks from them?

2*dly*, In the Eſkmount byre, the urine of the cattle runs off ſpontaneouſly, and is collected in a place by itſelf, with the greateſt care, ſo as to be uſed for making compoſts. In the Roxburghſhire byre, the urine ſeems either to ſtagnate in the byre, or to run into the dung court in the old way, and ſo both dirties the byre, and is in a great meaſure loſt.

3*dly*, The acceſs of the Roxburghſhire byre, and the road by which the turnips, &c. are propoſed to be conveyed to it, lies *through the centre of the dung court*; and this, with ſubmiſſion, ſeems ſuch a piece of ſlovenlineſs and abſurdity, that I ſhould beg leave to queſtion, whether any byre, with ſuch acceſs to it, has ever been erected. But it is added, that, if neceſſary, 'the large doors may be placed in the back wall of the byre.' And to this it is anſwered, that if this were to be done, there would then be no fewer than *five* (if not *ſeven*) doors to this one ſmall byre; and theſe too on oppoſite ſides of the building; the effect whereof muſt be, that of nearly, if not completely, ſtarving the cattle to death, by the cold.

4*thly*, The principal ground upon which the ſuperiority of the Roxburghſhire byre ſeems to be reſted is, the giving up the idea of the turnip barn, and converting the ſpace it occupies into a feeding byre alſo; and if this notion were to be approven of, it would be no difficult matter to carry it into execution, ſo as to feed nearly as many cattle in the one byre as in the other; and this without any additional building, but merely by changing the ſhape of the turnip barn. It is very eaſy however to ſhow, on a fair compariſon of the two byres, each holding 20 cattle, with 3½ feet of ſtall to each as in the Roxburghſhire byre, that the extra expence of building in the Eſkmount byre would not amount to *four guineas*; and there would ſtill remain in the Eſkmount byre a ſpace for depoſiting the turnips infinitely preferable to that in the Roxburghſhire one, viz. by taking two feet off the breadth of the cattleman's walk, the whole length of the byre, by means of a low partition.

But, the truth is, it is impoſſible to keep turnips in the ſame place where the cattle are feeding, even for a very ſhort period

riod of time, without their being thereby greatly injured and tainted. The effects of the breath and perſpiration of the cattle, and the effluvia ariſing from their dung and urine, will be found in a very little time to affect the quality of the turnips ſo materially, that the cattle will not eat them with that avidity and reliſh, ſo neceſſary to their fattening ſpeedily. The principal objects in the conſtruction of the Eſkmount byre, are cleanlineſs of food, litter, &c. *as articles of the moſt eſſential importance towards putting the cattle into high condition, and fattening them in the ſhorteſt poſſible ſpace of time.* In the Roxburghſhire byre the diametrically oppoſite doctrine ſeems to be adopted; viz keeping the cattle, and their food too, in the moſt dirty poſſible condition—worſe indeed than almoſt any cow byre, except perhaps ſome that may be found in the Highlands.

5*thly*, The ſpace allowed for the ſtalls of each of the cattle in the Roxburghſhire byre is *only* 3¼ feet; whereas, in the Eſkmount byre, it is *four feet*;—and this laſt ſpace will be found barely ſufficient for large cattle, eſpecially ſuch as are generally choſen for turnip feeding. Nothing is more prejudicial to cattle than crowding them cloſe together; nor any thing more beneficial to their health and comfort, than allowing them full room not only to ſtand clear of each other, but alſo to lye down and ſtretch themſelves when they chooſe.

6thly, Another circumſtance, of the greateſt benefit in the Eſkmount byre, is the manner by which the air of it is continually renewed (and conſequently rendered ſweet and comfortable) by the *ventilators*; which are ſo contrived as to keep the cattle cool in ſummer, without allowing them to be ſtarved in winter; and which, at the ſame time, effectually preſerves the roof and wood work of the byre from being rotted by the noxious exhalations which otherways would prove injurious. But theſe circumſtances are entirely diſregarded in the Roxburghſhire byre, as being of no kind of conſequence.

In ſhort, Sir, it does not appear to me, I muſt confeſs, that the Roxburghſhire byre, amidſt numerous diſadvantages and inconveniences, contains any advantage over the Eſkmount byre, *with one ſolitary exception*, which need ſcarcely have been noticed, viz. conveying the turnips from the barn by a wheelbarrow, in place of baſkets; an improvement which was adopted before Mr S. E. ſuggeſted it.

With regard to the plan of *pitting turnips*, ſo much recommended by Mr S. E., we preſume that this is noways new to any perſon who ever ſaw a potato; and when tried, it will be found to be a mode of preſervation, very inferior to ſtoring them up carefully in the barn, and covering well up with

ſtraw

ſtraw to preſerve them from the froſt; not to mention the trouble and expence of having ſo many large pits as will be required, if they be pitted near the farm-ſteading; nor the trouble of carting them home in winter, during a ſtorm, if they be pitted in the field where they grew. In either caſe, the trouble and expence would in a very few years exceed the expence of a turnip barn. But further, if turnips are to be pitted, it muſt be before the ground is wet by the winter ſtorms; whereas they can be brought home to the byre whenever a good freſh day occurs: you can thus eaſily have ſix weeks or two months ſtore of them in your barn, and you can add to theſe as occaſion and conveniency ſuits. But if they are to be pitted, it muſt be done at once, when the ground is dry. Now, Query, What ſize and number of pits would be required to contain fifteen or ſixteen acres of good turnips? If it be admitted that the turnips would cover the ground to the mean depth of three inches, which is certainly moderate, a crop of fifteen acres of turnips would amount to 7605½ cubic yards, or to upwards of 35 cubes, of which the ſides are 6 yards each, or 18 feet!!

A better mode of preſerving turnips during winter than by pitting them, is by building up the roots like a ſtack of corn, and covering them plentifully with thatch laid thick on, and faſtened with ſtraw ropes, not only at top, but alſo all along the ſides, ſo as to keep them as ſecure as poſſible from the effects of the froſt and rain, &c.

And now, Sir, I have only to conclude by mentioning, that, on trial, the Eſkmount byre has been found to anſwer the objects intended, beyond expectation; and ſeveral byres have been built on the model of it, and with ſatisfaction too. In one inſtance, the feeding troughs have been made of wood, in place of pavement or *flags*,—timber being more abundant in that particular quarter of the country. And on the whole, I am humbly confident, that no gentleman, or tolerably opulent farmer, who wiſhes to ſee his cattle kept in a healthy, clean, and comfortable ſtate, and at the ſame time to make the moſt of their dung and urine,—and alſo to give the cattle during the whole winter, clean, freſh, unfroſted turnips, with little trouble to ſervants and horſes, will ever have occaſion to grudge the trifling extra expence of erecting ſuch a byre as that at Eſkmount. I am, Sir, your conſtant reader, A STOT FEEDER.

January 1805.

P. S. In this account, I have not once noticed the various uſeful purpoſes to which the byre and barn may be put, when not occupied by the turnip feeding; but which will be found to be very numerous during the ſummer months, particularly in wet weather.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

Information requeſted concerning the Reclaiming of Mountain Land.

SIR,

IT will be extremely agreeable to many readers in this quarter, to receive information as to the beſt modes of planting mountain land producing at preſent nothing but heath, with the beſt kind of trees; alſo, whether *ſeeds* or *ſeedlings*, and at what age each kind, ſhould be planted. It would alſo be agreeable to know how each kind ſhould be *ſown* or *planted*; likewiſe, the beſt mode of fencing ſuch land, particularly where ſtone cannot be had.

As vaſt tracts of this kind of land in Ireland remain in a ſtate of nature, and in many places where lime cannot be obtained, it would be well that the *different* modes of reclaiming ſuch land were known, either by *burning*, *liming*, *ſanding* with *pit* or *river gravel*, or by *irrigation*, and alſo the effects of *fine river ſand*, which in many places is to be found, as well as thoſe of *marl*; the *kinds* of graſs ſeeds to be ſown in each piece of land, according to the mode in which it has been reclaimed, unleſs it is thought that the ſame kind will anſwer, let the mode of reclaiming be what it may. But as ſo many queries ariſe, I think it is beſt that they be claſſed thus, in order that they may be anſwered ſeparately.

1. The beſt mode of planting mountain land (ſuch as before deſcribed) *with ſeeds of foreſt trees.*

2. The beſt mode *with ſeedling foreſt trees.*

3. The beſt mode *with trees of a greater age.*

4. The beſt mode of *fencing* ſuch land where *ſtone* is *not* to be had.

5. The beſt mode of reclaiming ſuch land by *burning*, where lime, marl, ſand or gravel cannot be procured.

6. The beſt mode of improving it with lime.

7. The beſt mode with *gravel* raiſed from pits in the land, or got from the neighbouring rivers.

8. The beſt mode with *fine river ſand.*

9. The beſt mode with *marl.*

10. The beſt mode by *irrigation*, without the aſſiſtance of *lime*, *gravel*, *ſand* or *marl.*

11. The kinds of graſs ſeed beſt adapted for the land that may be reclaimed.

With hearty wiſhes for your ſucceſs in ſo laudable an undertaking, I remain, with much reſpect, your obedient, humble ſervant, H. P.

Cork, Ireland 1804.

TO

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

Anſwer to the Letter taken from the Tyne Mercury relative to the Bamborough Breed of Sheep.

SIR,

THE letter publiſhed in the Tyne Mercury, ſigned VERITAS, of which VIATOR has ſent you a copy, was ſo well underſtood by the breeders of this county, that it was thought perfectly needleſs to make any reply; but as it has been tranſplanted into your Magazine, and of courſe widely circulated, it *becomes* deſerving of notice. The *real ſtate* of the caſe ſhall therefore be explained as briefly as poſſible.

VERITAS, in his letter, quotes a paſſage from your Magazine for Auguſt 1803, in which it ſeems that the words 'want of knowledge,' had irritated the feelings of a certain perſon ſo much, as to induce him to get this letter written and publiſhed in the Tyne Mercury; with what propriety will appear in the ſequel.

VERITAS ſays, 'I will prove that the Bamboroughſhire, the *unadulturated Bamboroughſhire* breed of ſheep, are at this moment ſuperior in ſize, weight, and quality of wool, to any of the Leiceſters that ever were reared or improved by Mr Culley.' To this the breeders of the improved Leiceſters have to anſwer, that they never contended for ſuperiority of great ſize, or great weight. Their object is to breed ſheep which may weigh from 18 to 24 lb. per quarter, fatten at an early age, lay their fat upon the moſt valuable parts, and have the greateſt quantity of mutton from a ſmall, fine formed carcaſe, with the leaſt offal in bones, pelt, &c.

To prove the ſuperiority of the *unadulterated Bamboroughſhire breed*, VERITAS brings forward an inſtance of 'one of the moſt opulent and reſpectable farmers in Bamboroughſhire; one who has *never adopted* the plan of *croſſing his ſheep with the Diſhley breed*,' &c.—'From this farmer, one of the moſt eminent butchers in Northumberland has repeatedly declared, (*and will prove it if required*) that he has bought from him, and killed, this year, *the beſt lot of ſheep he ever killed in his life.*'

The gentleman who bred theſe '*unadulterated Bamborough ſheep*,' can tell VERITAS, or any other perſon who may inquire of him, that he has been in the habit of croſſing his ſheep with the Diſhley breed for upwards of twenty years, and, for this purpoſe, hired tups of Mr Marſhall of Chillingham Barns (bred from Mr Bakewell's Hunter) and from his neighbours, who had tups from Mr Culley; and that at Captain Simpſon's ſale he purchaſed part of the ſheep ſtock, well known to have been of the firſt Diſhley blood. Yet VERITAS ſays, that this reſpectable gentleman '*never adopted the plan of croſſing with the Diſhley breed.*'

Mr

Mr Thomas Ratcliff, one of the moſt reſpectable butchers in the north of England, was the perſon who killed the ſheep in queſtion; and 'he has repeatedly declared (and will prove it if required)' that he NEVER SAID they were '*the beſt lot of ſheep he ever killed in his life;*' nor ever ſaid 'he would prove it if required;' and VERITAS well knows what Mr Ratcliff ſaid to him on this ſubject at St Ninians Fair.

I forbear to make any comments. The public will draw their own concluſions; and am yours, &c. C.

January 1805.

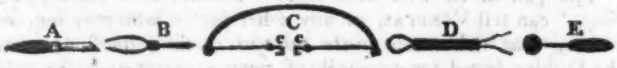
P.S. On the ſubject mentioned in the latter part of VIATOR's letter, I may probably trouble you at a more convenient opportunity.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

Account of the Chineſe Mode of making Capons.

SIR,

YOUR correſpondent S. J. in No. 18. wiſhes to obtain information on the method of making capons, as he thinks it may be an object in rural economy. There is not the ſmalleſt doubt that a capon is preferable to a hen or cock. They grow larger and fleſhier, and fatten more ſpeedily. I am not certain about the method formerly uſed in Scotland, but I believe it was done by running a ſharp ſkewer in on each ſide of the back-bone, directly upon the teſticles, and by moving it backwards and forwards the ſubſtance of the teſticles was deſtroyed, or at leaſt ſo much damaged as to effect the intended purpoſe. If the teſticles are firmly fixed to the muſcles of the back, this muſt be a very ſimple method, as it only requires to know exactly the ſpot where the ſkewer is to be introduced, and the depth to which it muſt be puſhed. I believe, however, that the teſticles are but looſely attached; in which caſe their muſt be great danger of miſſing the object, and perhaps wounding the inteſtines, which moſt probably would occaſion the death of the chicken. As the practice is univerſal in China, I ſend you an account of their method of performing the operation.



The wings of the fowl being folded back till they meet, the left foot of the operator is placed on them, the fowl lying on its left ſide. The great toe of the right foot is placed on its legs. The feathers are then plucked off the ſide. An inciſion, about an inch in length, commencing an inch from the back-bone, and extending obliquely downwards and forwards, is made with the knife A (the cutting part of which is the beveled

beveled point). This is carefully carried through the ſkin, muſcles, &c. till the inteſtines are laid bare. The flat blunt hooks *c c* are then put into the inciſion, which is extended and kept open by the elaſticity of the bamboo * bow C. The inteſtines are then puſhed aſide with the forceps B (which form the handle of the knife A.) The teſticle being now ſeen, is laid hold of by the forceps till the ſtalk † of graſs through the tube D is paſſed over it. The graſs is then drawn backwards and forwards through the tube, till the ſpermatic cord is *fawn* aſunder. The teſticle is then removed with the ſcoop E. The other teſticle is then laid hold of, and removed in the ſame manner. No blood iſſues from the cords, nor does the animal *ſeem* to feel any pain. The hooks are now removed, the wound cloſed; the feathers which were plucked off are ſtuck upon the wound with the blood; and the wing being put down on it, the animal walks off as if nothing had happened Another correſpondent having taken up my former ſignature K, I beg leave to ſubſcribe myſelf your very humble ſervant,

October 14. 1804. K. k.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

On the Cultivation of the Jeruſalem Artichoke.

SIR,

IT has often occurred to me that the *Jeruſalem artichoke* might be advantageouſly cultivated on moſſy ſoil. At Sir John Shaw Stewart's garden at Ardgowan, they are remarkably luxuriant in a wet ſoil, compoſed wholly of a black peat earth. In Auguſt laſt, the ſtems of the plants were ten feet high, and as thick upon the ground as they could ſtand. From my experience of them in my own garden, I can ſafely ſay that their roots are not injured by froſt; and that the tops, both in a dry and green ſtate, are greedily devoured by horſes and cattle. It is needleſs to ſay the ſame of the roots; they are by ſome people preferred to the potato itſelf. They are propagated in the ſame manner as the potato, and alſo by the ſtrings or runners, which connect the tubercles or bulbs together. In gardens, when once introduced on a ſpot, they cannot eaſily be got rid of. It is probable, however, that this would prove no objection in wet moſſy ſoils, as they would be a great advantage among the hay, by keeping it open and making it dry ſooner, beſides affording a greater quantity of the dried material; and in paſture they would eaſily be kept down by the bite of cattle. The roots or bulbs of this plant are eaſily procured from the nurſerymen at 2s. per peck;—one peck will give triple the number of ſets afforded from a peck of potatoes.

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* A ſlip of whale bone would do.

† A horſe hair would anſwer the purpoſe.

potatoes. I think *moſt* improvers might try this root, and favour the public with the reſult of their experiments. I am, Sir, yours, &c. DENDRONIA.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

Animadverſions on the Propoſal for Erecting Farming Schools.

SIR,

WHATEVER may be defective in the following remarks, I hope will in ſome meaſure be excuſed, when I aſſure you the writer is nothing more than one of thoſe ſlovenly, careleſs beings called *ploughmen*. In my humble lot I am an occaſional reader and great admirer of your very entertaining Magazine; but never dreamed of becoming a correſpondent till ſomething appeared in your laſt which nearly concerns both myſelf and whole brotherhood, viz. Elrona's propoſal (Vol. V. p. 332.) for eſtabliſhing farming ſchools where ſervants might be taught every part of their buſineſs. The reaſons he gives for ſuch ſchools are, that farming ſervants in general are careleſs, ſlovenly, and ignorant. In ſhort, all the faults that ever follow a poor man's caſe, are rolled, without mercy, upon our backs—a heavy accuſation indeed, and may juſtly ſuggeſt that important queſtion, 'What ſhall be done to ſuch unprofitable ſervants?' Whether your correſpondent's friend has worſe ſervants than any other farmer, or whether he is a practical farmer himſelf, or merely a gentleman from town, and more ready to judge from appearance than facts, I know not; but certain I am, that when our town gentry, dreſt in all the ſplendour that conſtitutes the faſhion of the day, are pleaſed to take a jaunt into the country, and ſee us, poor devils, toiling at plough or cart under a ſultry ſun, our faces covered with ſweat, and wan as the inhabitants of the torrid zone, with our courſe ſhirts and breeches of hodden grey, they are apt to conclude that we are creatures of another kind, and only fit to be ranked with our kindred clods around us. With all due reverence to the ſpruce merchant with a fine coat, would he exchange ſituation with us for but one hour, he would ſoon find himſelf degenerate into the appearance of a ſhabby ploughman, and would learn from experience, that our ſlovenly-like manner is more the conſequence of our hard ruſtic labour, than of any defect in our natural diſpoſitions. I ſuppoſe it is from ſuch ſuperficial obſervers that the word *ploughman* is ſet down for every thing that is ignorant, ſluggiſh, or ſlovenly, and that we are ſtigmatized with the epithets of *ruſtic*, *clodhopper*, *clown*, &c. With the moſt ſovereign contempt for ſuch opinions, I affirm, that as our buſineſs yields to none on the face of the globe for uſefulneſs, ſo it is no leſs honourable; and that, ſhould

ever

ever the period arrive when juſt notions of honour are entertained among men, a place betwixt the plough-ſtilts will be ſought with more keenneſs than a poſt at the head of an army, and brighter beams of glory adorn the brow of that man who makes the barren heath to wave with yellow grain, than of the ſavage warrior who covers the groaning earth with thouſands ſlain.

With regard to the perfection of our ſervices, I confeſs that, like every other claſs of men under the ſun, we are not what we ſhould be; but when the vaſt quantity of labour, which the operations of agriculture require, and the number of hands therein employed are taken into conſideration, it will perhaps appear that the farmer receives as large a quantity of labour, in proportion to the price he pays for it, as any other claſs of men whatever; and wherever the improved ſyſtem of agriculture is carried on under judicious farmers, who underſtand their own buſineſs and ſomething of human nature, conſequently how to manage ſervants, it will be found that labour is performed to a degree of perfection far from being deſpicable, and that too with a pliableneſs and alacrity which muſt be grateful to the heart of a good maſter. With reſpect to our moral characters as honeſt men, our fidelity and attention to our maſters' intereſts, we are not afraid to ſtand a compariſon with any other claſs of labouring ſervants; and perhaps, upon impartial inveſtigation, it will be found that no deſcription of maſters have fewer depredations made on their property by ſervants; and I am ſure we have never been guilty of formidable and unlawful combinations to raiſe our wages.

Though I am not afraid of your correſpondent's general charge againſt my brotherhood, and have endeavoured, in ſome meaſure, to reſcue them from his heavy accuſations, yet I by no means call in queſtion the utility of farming ſchools. It is probable that, if conducted upon right principles and by judicious men, they may have the ſame good effect as regular apprenticeſhips have in producing perfect workmen in any other buſineſs, though I fear few of us will be able to pay heavy prentice fees. I agree too with your correſpondent in thinking that, among the various cauſes of bad ſervants, bad maſters is the chief, and cannot help remarking that the reformation ſhould begin here; for if farm ſervants in general are bad, it follows, from your correſpondent's ſtrain of reaſoning, that the maſters in general are not good. I would beg of him to point out ſome method for the reformation of maſters, and then the buſineſs will go rapidly forward. It would be vain to ſend a young man from ſuch a ſchool as your correſpondent propoſes, and place him under a haughty domineering tyrant; as ſuch a perſon can never have a good ſervant, conſequently the education of the youth would be totally loſt.

I deſigned to point out ſome of the reſpective duties that ought to ſubſiſt betwixt a farmer and his ſervants, chiefly the reſult of my own experience during 20 years ſervice under various maſters of different characters and tempers; but, uncertain what may be the fate of what I have already written, ſhall reſt myſelf contented with the idea that I have ſaid enough to convince you that I am but an ignoramus ploughman. Be this as it may, tired with the labours of the day, a ſore back, a ſtiff hand, and with only the bottom of a chair for my writing-deſk, I am obliged, in conformity to my low table, to write on my knees; and, in this ſubmiſſive poſture, I conclude, imploring your conductorſhip will re-touch this paper with your maſterly pen, and inſert it in your Magazine, as it is probable that neither I, nor any of my brotherhood, will trouble you again for half a century to come.

I am your's, &c.

A FIFESHIRE PLOUGHMAN.

Pariſh of Markinch, 22d Oct. 1804.

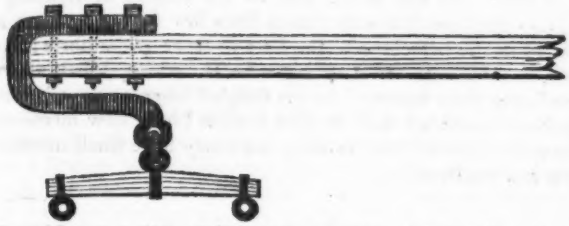
TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

On ſtopping Thraſhing Machines drawn by Horſes from low Starts.

SIR,

OBSERVING, in your Magazine for February (vol. v. p. 19.), a letter ſigned R. r. r., ſtating the difficulty found in ſtopping a thraſhing machine drawn by *traces* from *low ſtarts*; in caſe the ſame difficulty ſhould occur to any other perſon having a machine of that conſtruction, I beg leave to obſerve, that the remedy is eaſy and ſimple. It is only carrying traces from the breaching to the bar, or *ſtart* (as your correſpondent calls it), in *front* of the horſe. The above method, I know by experience, anſwers perfectly well. Your correſpondent alſo ſtates, that it may be inconteſtably *demonſtrated*, that, on a ſtart of 13 feet long, the horſe which draws by traces operates with a lever, at leaſt three feet ſhorter in effective ſtrength, than when fixed to perpendicular limbers on each ſide of his ſhoulders. This demonſtration would, I doubt, be more difficult than ſtopping the mill, provided the point of draught be properly applied to the lever. Your correſpondent acknowledges, that he is no great mathematician; and, being pretty much in the ſame predicament myſelf, I ſhall only obſerve (what I believe is very generally known),

known), that the nearer the point of purchaſe or draught is to the *end* of the lever, the greater will be the *power*. Now, by bringing a ſtout bar of iron round the extremity of the lever, as in the following ſketch,



the point of draught is brought very near the utmoſt extent of the lever; by which means the power of the horſe is much increaſed: and I beg leave to add, that the nearer the end of the *ſtart* can be brought *to the machinery*, the more purchaſe the horſe will have: but all this is the buſineſs or province of the *mill-wright*. However, if any hint I have given ſhould be of the leaſt ſervice to the practical farmer, my purpoſe will be anſwered.

I alſo beg permiſſion to recommend to the attention of gentlemen or farmers, who may have occaſion to erect farm or other buildings, in an expeditious and cheap method, to peruſe a treatiſe on the method of building, very generally practiſed in the Lyonois, and in many places of the Levant, called, technically, about Lyons, *Piſe*. * The treatiſe, in French, is by M. François Cointeraux; but an extract from it is given in Engliſh by Henry Holland, Eſq. in the Appendix to the 1ſt volume of Communications to the Board of Agriculture, which is quite ſufficient for ſhewing how the work ſhould be executed. This method of building has already become very general with many gentlemen in England. It is very durable (will laſt 100 years), may be very ſoon finiſhed, and is extremely neat in its appearance. But I refer to the before-mentioned treatiſe or extract. As *materials* are ſometimes ſcarcely to be had, and maſons' wages are ſo extravagantly high, it may be worth the attention of many.

Now, Sir, if you think any thing contained in this letter can be of the ſmalleſt ſervice to gentlemen or farmers, you will publiſh it, and oblige,

Your conſtant reader,

T.—t.

* Building in *Piſe* is a method of ramming *earth* in moulds or frames.

The following Letter has lately been received from the ſame Gentleman.

SIR,

I ſome time ago wrote you on the ſubject of ſtopping a thraſhing machine drawn by traces from low *ſtarts*, by carrying traces from the breaching to the ſtart in front of the horſe; ſince which, I have made trial of light ſhafts, which, I find, anſwer much better than traces. As the ſimpleſt improvement is often longeſt overlooked, I ſhall be glad if what I have now mentioned turns out ſerviceable to farmers, who may have ſmall machines of the low conſtruction.

T.—t.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

On ſowing Parſley, as a Green Crop for Horſes and Cattle.

SIR,

OBSERVING in your Magazine, vol. 5. p. 453, ſome ſuggeſtions by your correſpondent Agricola, recommending the ſowing of the common garden parſley among graſs ſeeds, as affording a food which is preferred by horſes and cattle, and thought particularly conducive to the health of ſheep, it recalled to my memory an anecdote I have often heard from my father, which occurred to him when in the botanical garden at Edinburgh, in the time of the late Dr Alſton.

He obſerved a toad feed regularly every morning on a bed of parſley for ſome weeks in the ſpring, which, when he firſt diſcovered, was apparently ſickly, much emaciated, and weak, but, in the courſe of a ſhort time, ſeemed to recover both health and ſtrength. Though you may probably think that its proving a medicine for toads is no great recommendation of parſley, yet I hope you will not be diſpleaſed at being informed of what appeared to me a curious fact, eſpecially as it affords, perhaps, a new teſtimony of the general ſalubrity of that herb. Might not the curled parſley be preferable to the common? It has a greater reſemblance to the clover plant when young, would produce, in my opinion, a weightier crop, be equally hardy, and as eaſily cultivated: But this is only my own ſuggeſtion, which I beg you will excuſe.

I am, Sir,

Your moſt obedient ſervant,

AGRICULTURÆ ANICUS,
ſupra Tiviotam.

Jedburgh, 3d Dec. 1804.

TO

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

SIR,

I REQUEST that you will inſert the following queries in your Magazine, which probably may be the means of procuring uſeful information on the ſeveral topics therein embraced. It is proper, however, to inform you, that moſt of the queries are extracted from a foreign publication; though a previous appearance cannot in the leaſt leſſen their value, or preclude inveſtigation, among your numerous correſpondents.

Query 1. What is the nature of bogs, marſhes, and ſubſoils, in the ſeveral parts of the kingdom? how are they formed? whence proceeds the water with which they are filled? is it ſtagnant, and on what account? do we find turf in theſe bogs, and at what depth? what is the beſt uſe to be made of them? and might not ſome machine be invented to leſſen the expence of draining theſe bogs?

2. Which is the beſt method of bringing a drained bog into tillage, and what crops is it beſt at firſt to ſow on it? What trees or plants thrive beſt in a moiſt ſituation?

3. By what means can wood, eſpecially fir, be rendered leſs combuſtible; and may it not, by ſome preparations, be preſerved from decay and worms? and which is the beſt ſeaſon and manner of felling trees?

4. In what places are the ſeveral kinds of marl found, at what depth, and what are their qualities, and to what uſes are they applied?

5. Do we not ſometimes find under the ſurface a different kind of earth, proper to ſerve as a manure to the ſoil?

6. In what manner can the nature of land be judged of by the plants it produces, and their vigour?

7. How are the ſeveral kinds of artificial paſtures to be uſed to the beſt advantage; and what graſſes ſucceed beſt in the ſeveral ſorts of ſoil? What noxious plants grow in our fields?

8. What is the beſt method of preſerving graſs, and deſtroying weeds and fog, in meadows and paſtures?

9. In what manner are rough meadows and paſtures beſt levelled?

10. What are the precautions neceſſary to be taken in weeding wheat?

11. What remedies are beſt adapted to the diſtempers of wheat before it ſpindles?

12. Which is the moſt advantageous method of cutting and getting in grain at harveſt? Might not ſome machine be invented to cut the corn, and gather it into ſheaves, ſo as to ſave the laborious and expenſive work of the ſickle *?

13. What conſtruction is beſt for a granary, ſo as to keep corn in a ſmall compaſs, and without danger?

14. In what manner can corn be beſt guarded againſt the ravages of inſects, &c.?

15. What precautions are neceſſary to prevent corn from degenerating, ſo as always to have good ſeed? Is it beſt to buy the choiceſt at market, reſpect being paid to the nature of the ſoil it grew on laſt, or to chooſe the moſt perfect our own crop can yield, &c.?

16. What are the different ſorts of implements and utenſils employed in the work of huſbandry in each county? †

17. What is the beſt form of borers to diſcover the quality and depth of the ſoil, &c.?

18. What is the beſt form of a ſteelyard for weighing live animals, ſuch as oxen, ſheep, and ſwine?

19. What is the beſt form of ſtables, cow-houſes, ox-ſtalls, covered ſheep-pens, &c. regard being had to the convenience of ſituation with reſpect to the dwelling-houſe, &c. the ſaving trouble in attendance, the health of the cattle, the ſaving of dung, &c. &c.?

20. What kind of paſtures agree beſt with ſheep? What are their diſtempers, the cauſes of them, and their remedies? What is the beſt winter fodder for them?

If theſe queries appear in your Magazine, I may probably write you afterwards on other ſubjects, and am,

Yours,

J. B. C. E—T.

Northumberland, April 13.

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* Thomas Brown of Alnwick, laſt year (1803), invented a machine for cutting and gathering the corn into ſheaves, but his ingenious machine did not altogether anſwer the intended purpoſe. It is ſaid, he intends to make ſome improvement upon the principle; but, not having heard further about it, I propoſe the above query.

† Any of your correſpondents who ſhall anſwer the above queries, would greatly enhance the value of anſwers, by giving an accurate draught and deſcription of the implement deſcribed, which ſhould be plain and eaſily underſtood.

An improved Rotation of Cropping on the rich Soils of Eaſt Lothian recommended.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

SIR,

I OBSERVE, in your Magazine, vol. v. p. 279. ſomething ſet forth reſpecting the moſt approved rotation of crops practiſed upon the deep loams, or rich ſoils of this county; but paſture graſs ſeems to be entirely excluded from any of the ſyſtems therein recommended, except in one, where it is very improperly introduced too remote from the fallow and dung. It is well known that the beſt lands, through exceſſive cropping, whatever the alternatives may be, will loſe much of their productive nature, particularly where a ſufficient quantity of dung and lime cannot eaſily be procured, without undergoing a regular courſe in paſture graſs, by which alone they will regain the moſt nutritive ſubſtances, and return into the regular courſe of cropping, fully prepared to renew the moſt luxuriant crops. Therefore, ſuppoſing a farm to conſiſt of 360 acres in all, of the beſt ſoil, viz. 240 acres of which in ſummer fallow and crop, and 120 acres in paſture graſs, the particular ſyſtem of cropping that I would recommend is as follows:

1. { 20 Acres plain fallow.
   { 20 Do. turnips.
2. { 20 Do. wheat after plain fallow.
   { 20 Do. barley after turnips.
3. { 20 Do. red clover and annual ryegraſs after wheat for one year cutting.
   { 20 Do. the uſual kinds of clover and perannual ryegraſs after the barley, for paſture graſs, which may alſo be cut for hay the firſt year.
4. { 20 Do. oats after the red clover and annual ryegraſs.
   { 20 Do. oats after the oldeſt paſture graſs upon the farm.
5. —40 Do. drilled beans and peaſe after oats.
6. —40 Do. wheat after do.

From an attentive peruſal of the above, it will be obſerved, by every experienced farmer, that ſo ſoon as that rotation is properly eſtabliſhed (to whom it may be unneceſſary for me to point out any particular method to obtain that end, as the plan

muſt be varied agreeable to the many different ways in which a farm may be managed for the time being. For inſtance, ſuppoſing a farm to be newly entered to, where the outgoing tenant is bound to leave little or no graſs in good order, in which caſe it will be neceſſary to ſummer-fallow a much larger proportion than is uſual for the firſt and ſecond year at leaſt, by which means the rotation alluded to may as ſoon as poſſible be got into; and if, on the other hand, the outgoing tenant is bound to leave a large proportion of graſs ſown out with the firſt crop after ſummer fallow, the rotation may be immediately entered upon, as recommended, ſo that the crop upon the farm will always, with little variation, (for I am aware that a bad ſeaſon may at times cauſe a difference), ſtand thus: 20 acres turnips, 20 ditto barley, 60 ditto wheat, 40 ditto oats, 40 ditto drilled beans and peas, 40 ditto young graſs, which, including 20 acres of plain ſummer fallow, and 120 acres of old paſture graſs, makes in all 360 acres; the ſame number of acres in old paſture graſs being annually kept up by replacing, at the bottom of the liſt, 20 acres of new, in lieu of the 20 acres of the oldeſt, taken off the top of the liſt, and put under the plough. It will alſo be obſerved, that, in courſe of the firſt ſix years cropping, ſuppoſing the paſture graſs to be all ſown down with the barley crop, the plain ſummer fallow will have undergone a different courſe of cropping, therefore it is only reverſing it at the commencement of the ſucceeding ſix years, by beginning the rotation upon the former plain fallow with turnips, &c. which, upon the whole, forms ſuch a change of ſyſtem upon the ſame farm, which it is univerſally allowed that nature delights in, that, in my opinon, can hardly be equalled; beſides, there can be no doubt that the paſture graſs upon ſuch a ſoil will turn out to good account, for the purpoſe of feeding early ewes with lamb, breeding cattle for the turnip ſtall, &c.; by which it will appear, that the farmer's intereſt is not confined to alternate white and green crops alone (as endeavoured to be impreſſed upon the minds of the public by your correſpondent, like as the A, B, C, is confined to the capacity of children of two or three years old), but it is to a certain degree poiſed betwixt cropping and feeding; ſo that if it ſhall happen, as it ſometimes does, that, from the effects of an unfavourable ſeaſon, a deficiency of crop enſues, both in quality and quantity, while, at ſame time, the graſs continues good, or that the corn (be the crop what it may) ſhall be ſelling at lower prices than it is poſſible he can afford it, while live ſtock, of all kinds, are ſelling at ſuch high prices, he will not feel the deficiency ſo much as he whoſe intereſt entirely depends upon a corn crop. I could mention ſeveral more rotations, into which I conceive

paſture

paſture graſs might be introduced with ſucceſs upon worſe ſoils; but as I am but a young farmer, and may have ſaid enough already to be found fault with, and as I am aware there are many old agriculturiſts of much greater abilities than me, that may deſcribe them to better purpoſe, I ſhall leave the reſt to them for the preſent; but if, by their ſilence, they ſeem backward in endeavouring to bring paſture graſs into more repute, I may trouble you with a little more of my thoughts upon the ſubject, if you ſhall think this worthy of a place in your next publication. I am, Sir,

Your ſincere friend,

Eaſt Lothian, Oct. 22. 1804. T. B.

FOR THE FARMER'S MAGAZINE.

Mode of making Potatoe Bread, in ſome Parts of the Highlands of Scotland.

At a time when the price of bread is likely to be ſo high, and potatoes are ſo abundant, the following mode of preparing potatoe bread may not be unacceptable to ſome of your readers.

In the northern Highlands of Scotland, they make very good potatoe bread in the following manner.

The potatoes are ſcraped well when raw, for, if they are boiled, and then peeled, the potatoes do not take the ſame conſiſtency.

They are then thoroughly boiled and maſhed, with a little ſalt, and made into the ſhape of a loaf, or of a large pudding, and laid by to cool for twelve hours.

It is commonly done at night, to be uſed next day.

When wanted to be uſed, the potatoes, thus prepared, are cut either into thick ſlices, and eat with butter put into the middle when hot, or into thin ſlices, and eat as bread. The ſlices, whether thick or thin, are put on a brander, and very well toaſted, and the bread is ſweet and wholeſome.

S.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

On the preſent State of Farming in Eaſt Lothian, compared to what it was in former times, with ſome Remarks upon the Return made from Capital Stock inveſted in Agriculture.

Sir,

Few papers in your miſcellany have excited more general notice in the diſtrict wherein I reſide, than the *Comparative View of Farmers fifty years ago, and at the preſent day*, vol. v. p. 387.

and

and it muſt be owned that ſuch ſtatements, if well executed, always ſtand a good chance of being favourably received, becauſe they come home to the heart and feelings of agricultural readers. The paper in queſtion engaged the converſation of every company for ſeveral weeks after it was publiſhed; and I only join the general voice when I ſay, that a more correct and enlightened view of ſociety among the cultivators of the ſoil could not have been furniſhed. The writer, whoever he is (for this point remains unaſcertained), poſſeſſes an intimate knowledge of local facts and circumſtances. He is well acquainted with books, and ſeems gifted with a mind capable of making a good uſe of them. He embraces a wide range of obſervation, and his remarks are made with a degree of animation, perhaps unaptly calculated to make us believe, that his birth ſtands ſo far back in the parochial records, as his premiſes ſeem to intimate.

But while I am diſpoſed to rank the author of the "Comparative View" high in the ſcale for genius and ability, and to conſider his performance as throwing much light on the ſtate of ſociety at different periods, I am not altogether ſure, whether his real object can be viewed as meritorious, or whether his concluſions will prove beneficial to the occupiers of land. Perhaps I miſtake his meaning, though little doubt need be entertained concerning the interpretation which will be put upon it by thoſe who are concerned in the letting of land. Indeed, if "farmers are the moſt thriving claſs of ſociety, and thoſe of Eaſt Lothian the moſt thriving of that claſs," the legitimate inference is, that land, notwithſtanding the high value of labour, and increaſed and increaſing amount of public burdens, is ſtill under-rented.

With this view of the ſubject on my mind, but without intending to call in queſtion the facts and circumſtances ſtated by your correſpondent, which, on the whole, are correctly given *, I requeſt indulgence, whilſt I offer a few obſervations upon the ſtate of farming in the diſtrict chiefly noticed. 1. I ſhall conſider the ſtate of farming practiſed there in former times, and ſhow that thoſe *then* concerned in that buſineſs were not entitled to the like advantages as may *now* be juſtly claimed by their ſucceſſors. 2. Endeavour to aſſign ſome cauſes why farmers, at the preſent day, are entitled to expect greater profits than thoſe enjoyed by their predeceſſors. 3. Say a few words concerning

* The rent of Long Niddry is rated half a boll of wheat, and half a boll of barley, higher than it really is. We believe the rent of Craigielaw is alſo exaggerated.

cerning the gains and profits from farming land, and ſhow that ſuch are inferior to thoſe which may be obtained from inveſting the like capital ſtock in trade or manufactures. Laſtly, Some detached obſervations ſhall be given.

1. In former times, ſay forty or fifty years ago, farming in Eaſt Lothian was generally carried on upon a ſmall ſcale; the ſize of farms rarely exceeded 200 acres, and theſe were generally laboured by 8 or 12 horſes, yoked in two or three ploughs. The implements of huſbandry then uſed were not numerous, and of a plain and ſimple conſtruction, cheaply purchaſed in the firſt inſtance, and eaſily repaired afterwards. In this ſtate of things, to ſtock even an ordinary farm did not require much money. Perhaps it would not be wide of the mark to eſtimate forty ſhillings per acre, as a ſum ſufficient for carrying on the huſbandry then practiſed. But, be this as it may, when the cheapneſs of every article, the few improvements then made, and the low rank ſuſtained by cultivators in the ſocial ſcale, are attentively conſidered, it muſt appear, almoſt as a ſelf-evident truth, that the capital formerly employed in cultivating the ground was but trifling and inconſiderable.

As the profits from farming ought to be, and generally are, proportionable to the extent of capital ſtock employed, the cultivators of former times neither received, nor did they expect, a great return from their reſpective undertakings. They lived in a confined or contracted ſphere, joined little in ſociety, and ſeldom ſtepped beyond the limits of their ſeveral poſſeſſions. Their outlays were not great, but their incomes were proportionally ſmall; nor had they any claim to great profits, the whole circumſtances under which they were ſituated being duly conſidered. Their capital ſtock, moderately ſpeaking, did not exceed one fourth of what is now required to ſtock a farm of ſimilar ſize, as might eaſily be demonſtrated, could a doubt remain on the ſubject. The increaſed amount of capital ſtock ariſes partly from the depreciation which has taken place in the value of money, or, which is the ſame thing, and more agreeable to common ideas, to the riſe which has taken place on the price of every article uſed in the culture of land; but more particularly from the ſuperior quality and number of the implements and other articles employed; as, for inſtance, ſaddlery ware for one horſe is now more expenſive than what formerly would have decked out the horſes of four or five ploughgates. In modern times, even more money has been laid out in erecting a thraſhing machine, than what formerly would have half-ſtocked the particular farm on which it is ſituated.

2. Some of the cauſes why farmers, at the preſent day, are entitled

entitled to greater profits than their predeceſſors, are the following. The capital ſtock neceſſary for carrying on improved huſbandry, as already ſaid, is tripled in ſome caſes, and quadrupled in others, which is of itſelf a good cauſe; but a better one may ſtill be found in the increaſed ſize of farms, a practice which has of late extenſively taken place in this diſtrict. This increaſed ſize has occaſioned capital ſtocks to be put into action, the very intereſt of which would have enabled the owners to live comfortably, even had they bound up their talents in a napkin. Are not ſuch people entitled to every comfort which life can afford? and have they not a valid claim to the poſſeſſion of good houſes, well-ſtored larders, and, in ſhort, to every thing enjoyed by the merchant or manufacturer? Surely they have; and thoſe who would, either directly or indirectly, attempt to limit their comforts, or to deprive them of their ſtock, are neither friends to private right, nor to the improvement of the country. If farming, whatever circumſtance ſhould occaſion ſuch a revolution, is reduced to a condition which deprives the owner of a ſuitable recompence, capital ſtock will run into other channels; and improvements, from the inability of the occupiers, will ceaſe to be undertaken, far leſs to be ſucceſsfully executed.

If we turn our eyes over the diſtrict, and contemplate what has been done of late years towards its improvement, few doubts will remain as to the advantages derived from capitaliſts embarking in rural undertakings. Such may be conſidered as having received a liberal education; as free from prejudice, the bane of improvement; as diſpoſed to introduce new practices, and enjoying the fulleſt opportunities for acquiring knowledge in every branch of rural art. Poſſeſſed of ſufficient ſtock, they are able to go through with every practicable plan; and, even ſhould ſuch not altogether ſucceed, material injury will not be ſuſtained by them from a partial failure. When perſons of this deſcription embark in rural undertakings, proprietors of land have cauſe to rejoice. Good houſes are built, encloſures reared, waſte land cultivated, moraſſes drained, and meliorations of every kind executed much to the benefit of the property in all time coming, but eſpecially when the leaſe, under which they were executed, arrives at a concluſion. Your correſpondent obſerves, "that the beſt farm-houſes in the county have been built by tenants at their own expence, with the ſpirit of proprietors, though perhaps indeed, with more taſte than prudence." The obſervation is juſt, and corroborates what I am urging in favour of capitaliſts. Indeed, almoſt every one of the circumſtances ſtated in the "Comparative View" apply to them

them only, and not to the great body of cultivators. How can ſmall or poor tenants ornament or improve extenſively, when ſuch things are inconſiſtent with their ſtate and circumſtances. According to the rate of modern rents, a ſmall tenant can do little more than procure ſubſiſtence for himſelf and family, therefore is entirely incapable of executing ſubſtantial improvements. To expect that he would build an elegant houſe would be highly unreaſonable; and yet inſtances are not unfrequent of tenants of a different deſcription, upon leaſes not exceeding 21 years, having expended four or five hundred pounds in erecting a houſe, which is neither more nor leſs than paying a rent of forty pounds, or upward, for family accommodation.

As every claſs of the community have, in the age wherein we live, advanced a ſtep forward, the farmer, even had he remained circumſtanced as formerly, might fairly lay claim to a ſhare of the general improvement. But when to this is added the increaſed ſize of his poſſeſſions, the increaſed value of his ſtock, viewed both in its natural and improved ſtate, and the increaſed outlays attendant upon modern farm management, he is indiſputably warranted to expect a proportional increaſe of profits. Theſe profits he may either expend in purchaſing the comforts, or, as ſome may ſtyle them, the luxuries of life; or he may accumulate them for the benefit of his poſterity, as to him appears moſt proper and expedient. That he is entitled to live better, or which is, in fact, the ſame thing, to greater gains than his predeceſſors, hardly requires to be demonſtrated; though I have thought it neceſſary to aſſign a few of the cauſes which entitle him to an increaſed compenſation or reward.

When your correſpondent ſpeaks of the numerous comforts enjoyed by farmers, and makes an inference that they are not leſs at eaſe than their forefathers, both his premiſes and his deductions are unqueſtionably correct. I lament, however, that he ſtopped ſhort, and did not extend his concluſions to their proper magnitude. With "greater capital and ſuperior ſkill," as admitted by him, they would ſeem entitled to a greater ſhare of comforts; or, in other words, their gains and profits ſhould exceed thoſe enjoyed by their forefathers. To be ſure, he may be of this opinion for any thing expreſſed to the contrary in the "Comparative View," though there is not a paſſage therein which can be uſed in verification of ſuch a ſentiment. He may tell me that his principles are in uniſon with thoſe expreſſed in this paper, and that he is equally as eager as I am that the farmer ſhould be handſomely remunerated. I hope he is. But it is neither his principles nor his premiſes which I conteſt. It is the application of theſe principles, and the erroneous uſe which may

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be made of them by others, that I oppoſe. The farmers of Eaſt Lothian pay rents as high, if not higher, than done in other diſtricts; their capital ſtocks, generally ſpeaking, are not exceeded by thoſe of their brethren elſewhere; their management will ſtand a compariſon with that of any county which has come under my inſpection; conſequently if their ſituation is comfortable, and their circumſtances opulent, ſuch things are no more than what they are juſtly and equitably entitled to. I add an anecdote which may ſerve to amuſe your readers. Two years ago, ſome reſpectable Engliſh farmers viſited this diſtrict, and viewed the ſtate of huſbandry with conſiderable attention. I put a queſtion to one of them, namely, What he thought of our huſbandry? and his anſwer was, "Why, my dear Sir, if you Scots farmers came to England, and got our farms, and paid our rents, you would make eſtates; but if we got your farms, and paid your rents, we would all go to jail. That is my opinion." And certainly a ſtronger and more emphatic one could not have been given.

3. That the gains and profits from farming are inferior to thoſe which may be procured from inveſting the like capital ſtock in trade or manufactures, ſhall now be elucidated.

The capital ſtock employed in cultivating land can ſeldom be turned over more than once in a year; and in many caſes, particularly where farms are wholly arable, fifteen or eighteen months muſt elapſe before a ſingle halfpenny expended in the culture of corn can be returned to the owner. Where ſubſtantial improvements are executed, ſuch as fencing, draining, liming, and the like, a return can only be procured at a more diſtant day; which things neceſſarily leſſen the value or produce of agricultural ſtock. Even at the diſtant periods we have mentioned, when returns can be expected, it rarely happens that they exceed 10 *per cent.* of the capital employed: and as this capital cannot, at the moſt, be turned over more than once in the year, except where ſtock huſbandry is practiſed, the amount of the return, in ordinary ſeaſons, is unqueſtionably ſmall.

But none of theſe things affect the trader or manufacturer. The capitals of ſuch may be turned over three, four, or five times in a year. Indeed, the moment that the one purchaſes, or the other manufactures, he may convert his commodity into money, and commence a freſh ſpeculation. Hence a capital comparatively ſmall, is ſufficient for carrying on mercantile concerns; at leaſt the ſame extent of capital, as neceſſary for the agriculturiſt, will enable the trader and manufacturer to go through with a more extenſive buſineſs, from the facility which both enjoy,

enjoy, of turning their goods into caſh almoſt as often as they pleaſe.

Again, the merchant and the manufacturer can avail themſelves much more of credit than is practicable in the caſe of the agriculturiſt. The articles which he has to purchaſe for farm-ſtock can rarely be had, unleſs for ready money. He cannot go to market without carrying money in his pocket, and even his advances on account of wages are a heavy burden of themſelves, eſpecially where improvements of any extent are in hand. Theſe circumſtances are not felt in the trader's caſe, becauſe cuſtom or uſage has eſtabliſhed a certain length of credit, which will not be refuſed to any one, unleſs he is either unknown or undeſerving of confidence.

But, without inſiſting upon a point which will not be much diſputed, ſome circumſtances may be ſtated, more nearly a-kin to facts than to abſtract reaſoning. It is well known, that much more money has been realized by traders and manufacturers, than by agriculturiſts. The latter may enjoy all the comforts of life, but rarely attains to the poſſeſſion of its ſuperfluities. We have not ſeen above one in the hundred of farmers, in our day, even in the moſt opulent diſtricts, get the length of purchaſing landed property; whereas, go to the neighbourhood of an extenſive mercantile town, and you will find the ground almoſt wholly in the hands of thoſe engaged in trade. In a word, it will be found, that, in general caſes, the capital ſtock inveſted by agriculturiſts would have yielded a far greater return, had it been devoted to trade or manufactures; and that it is more owing to the pleaſure and amuſement enjoyed from rural life, than to the gains and profits ariſing from its purſuits, which entices ſo many people to become its votaries.

Allow me now to conclude with a few detached obſervations.

Since the remoteſt period to which hiſtory reaches, perhaps ſince the firſt diviſion of territorial property, a violent prejudice or jealouſy has been entertained againſt the poſſeſſors of land, by thoſe who had not come in for a ſhare; and this prejudice, which appears to have been handed down from father to ſon for numberleſs generations, has, in later times, been transferred from proprietors of the ſoil to thoſe who occupied it under them. Such, though, ſtrictly ſpeaking, they may be ranked as the firſt of manufacturers, have in no country been held deſerving the like encouragement with mercantile people. Fiſcal regulations are to be found in every ſtatute-book hoſtile to their intereſt; and ſeldom has the agriculturiſt been regarded as an object of public favour. With many people, even with thoſe whoſe minds are ſufficiently liberal in other matters, his proſperity is conſidered

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as inconſiſtent with the general proſperity of the country; though, if ſuch would conſider the ſubject in a diſpaſſionate manner, they would be led to acknowledge, that no country can flouriſh where the firſt of the arts does not proſper or prove ſucceſsful. When the farming trade is at its loweſt ebb, that is, when the commodities therein produced are ſold at an under rate, what gratification is felt by thoſe who call themſelves the public, who ſeldom reflect that rural proſperity enſures them in a full ſupply of the neceſſaries of life, and affords employment to a countleſs multitude, who would otherwiſe be unable to earn their daily ſubſiſtence?

Again, with many people, every comfort above mere neceſſaries, enjoyed by the farmer, is viewed as an abſtraction from the general ſtock. The farmer is ſeldom conſidered in the ſame light with traders or manufacturers, or ſuppoſed to poſſeſs an equal right with them to the fruits of his labour, either in body or mind, or to the profits of his capital ſtock. My good old friend, Sir David Dunder, uſed to ſay that farmers were well off, if they got plenty of milk and haſty pudding; and it has been aſſerted, that he often uſed ludicrous methods to aſcertain how they fared. Whether theſe things be true or not, is a matter of no importance. It is ſufficient for my argument, that the public diſpoſition is too much inclined to limit the comforts of thoſe engaged in agricultural concerns. Though ſuch a diſpoſition is by no means uncommon, I am far from ranking your correſpondent as under its influence, though I do not conſider it as an improbable circumſtance, that many parts of his intelligent and amuſing communication may be uſed by others in a miſchievous way. Landed proprietors may view the ground as under-rented, therefore attempt to ſcrew up their demands to a pitch which may ruin cultivators altogether, whilſt the purchaſers of farm produce may be led to infer, that its articles are too high, and that prices ought to be diminiſhed.

On theſe accounts, I have extended this paper to a length which ſome people may perhaps conſider as unneceſſary. I have attempted to ſhow, that the increaſed proſperity of thoſe engaged in agriculture ariſes entirely from the increaſed ſize of farms, and the increaſed capital employed in farm culture, and that theſe circumſtances entitle thoſe concerned to greater profits than were gained in former times. I have alſo ſhewn, that the capital inveſted in agriculture makes an inferior return to that which is devoted to trade and manufacture, and that the jealouſy or prejudice entertained by the great body of mankind againſt thoſe engaged in agricultural purſuits, is the true ſource whence proceeds every endeavour to limit the profits of rural practitioners.

Before

Before I am done, it may not be improper to add that farming, on the whole, is thriving and flouriſhing in this diſtrict; but, were it otherwiſe, the great body of inhabitants would neceſſarily be reduced to ruin and miſery. Very little trade, in the common acceptation of the word, is carried on amongſt us, nearly the whole of the capital ſtock being devoted to rural purpoſes, and this capital may ſafely be eſtimated at half a million, ſtating excluſive of what is reſerved for extraordinary emergencies. Owing to this ſuperior capital, Eaſt Lothian farmers are enabled to weather adverſe ſeaſons and depreſſed markets, which often run their brethren aſhore in other diſtricts; and it deſerves to be remarked, as a curious circumſtance, that, at the very identical period when your correſpondent held them up as *the moſt thriving of a thriving claſs*, a conſiderable number were unable to make good their engagements out of the crop in hand; in other words, to pay the rent and burdens connected with it. Theſe engagements were no doubt fulfilled, though, in many caſes, from funds formerly accumulated, and perhaps meant for other purpoſes. I am your's, &c.

AN EAST LOTHIAN MAN.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

On the Benefit of rolling Turnips, when infeſted by the black Caterpillar.

SIR,

EARLY in July laſt, the ſmall black caterpillar, ſo common at that time over all the country, made its appearance in a field of turnips of mine, and in a ſhort time devoured every green leaf, leaving almoſt no part of the plant, except the ſtump and fibres. I cauſed the whole field to be three times cloſely rolled, which not only deſtroyed the vermin, but cloſed the ground effectually around the mutilated plants. In a few days thereafter, we had ſome fine rains, when the plants began to ſhow freſh leaves, and puſhed on till they became an excellent crop. I ought to have mentioned, that this field was ſown by way of experiment, and contained both ruta-baga, and all the varieties of turnips. Each kind ſuffered alike from the worm, and the beneficial effects of the rolling were equally diſcernible upon them all. I think myſelf, therefore, warranted to affirm, that rolling of turnips, when infeſted with the black caterpillar, is the beſt way of reſiſting the attacks of this deſtructive inſect; and I hope, in future, no

perſon will think of ploughing up fields that may be infeſted, till they have made a fair trial of the remedy I have now recommended. I am your's, &c.

Lanarkſhire, Dec. 1804. M.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

Account of a Machine, whereby Wheat Land may be harrowed in a wet Seaſon, with a Plate, and Deſcription of its ſeveral Parts. Communicated by Mr Andrew Gray, Millwright.

SIR,

THE introduction of machinery into ſeveral departments of practical agriculture has been attended with the moſt beneficial conſequences, and ſeveral recent improvements in this line, have, in a great meaſure, enabled the agriculturiſt to extend his operations, and execute them with the like facility and regularity, as, for many years, have guided thoſe carried on by the manufacturer. Senſible that it is your earneſt wiſh to diſſeminate every kind of information that may contribute to promote rural improvement, or benefit thoſe concerned in the cultivation of the ground, I take the liberty of tranſmitting you a plan and deſcription of a machine, which may be ſucceſsfully uſed for accompliſhing the ſowing of wheat in the wetteſt weather. Something has already been ſaid on this ſubject, by your correſpendent W. in the ſupplement to vol. iv., and I am extremely happy that the deſign met with the approbation of a gentleman like him, who poſſeſſes eminent agricultural abilities, as is conſiſtent with my perſonal knowledge. The ſowing of wheat, under exiſting circumſtances, is the moſt important branch of the corn farmer's labour. In ſome ſeaſons, according to the old method, it is phyſically impoſſible to get wheat land harrowed, eſpecially what has been reduced by ſummer-fallow, without ſubjecting it to poaching from the horſes, or to a great loſs of ſeed: hence it often happens, that a leſs quantity of wheat is got ſown, than required for the ſupply of the market. But, were the machine, which I am now to deſcribe, to come into general uſe, no ſuch deficiency could be felt, becauſe with it wheat may be ſown in the moſt adverſe ſeaſon, and a regular ſupply furniſhed, adequate to the increaſed and increaſing demand for that article.

I am your's, &c.

A FRIEND TO IMPROVEMENTS.

Explanation of the Plate.

FIG. I.—A A Repreſents the ridge ſuppoſed 15 feet broad.

B B Are three harrows and a half, which cover the breadth of

of this ridge. In each harrow are 20 teeth of iron, and in the half are 10; in all 70, which divides the ridge into 69 equal parts. See V. V. And, when moved along, proceed in lines nearly two inches and five eights diſtant from one another, and parallel to the line of draught.

C C, The furrows on each ſide of the ridge, in which the horſes walk when drawing the machine with the harrows, which prevents them from poaching the land in the proceſs of harrowing.

D D, Iron haſps, with hooks, which connect the harrows, keeping them at the ſame diſtance from one another as the ſpaces between the bulls in the harrow; ſo that, by this means, the teeth are equally divided on the ridge, the openings in the haſps require to be made long in a perpendicular direction to the ſurface of the harrow, ſo that the hooks may move up and down in them, and allow the harrows to riſe or fall according to the inequality of the ground.

E E, Iron bars fixed near the points of the bulls in both ends of each harrow. In theſe bars are different holes, in which the points of the iron rods P R are faſtened by ſcrewed nuts; by this means they may be eaſily ſhifted from one hole to another, when found neceſſary.

F F, A beam, extending the whole breadth of the ridge, made of two pieces joined together by ſliders in the groves X and Y, by which it can be lengthened to anſwer any ridge, from 12 to 18 feet broad. This beam is ſupported at each end by the frames S and T, in which the wheels roll in the furrows, in the horſes' track. See FIG. II. To this beam the harrows are connected by the haſps and chain G G, from each harrow. The haſps are fixed on the ſquare of the beam (ſee W, ſeparate fig.) by plates and ſcrewed nuts on its upper ſide, by which they can be ſhifted at pleaſure, and fixed upon any place of the beam, according to the number of harrows required for the breadth of the ridge. In the chains at U, is a roller, where it joins the harrow, and, when the horſes are turned, runs along the rods P R, and prevents them wearing.

H K, The ſhafts in which the horſes are yoked to draw the machine. When the harrows arrive at the end of the ridge, it would be difficult to turn them to go over the ſame ridge again, although they could eaſily paſs to the next ridge; but in order that the harrows may return on the ſame ridge, and prevent the trouble of turning the whole machine, the ſhafts are made to turn on iron bolts, N and O, in the frame. Theſe bolts go through the ends of the croſs beam F, and the frames S T; ſo, when the horſes with the ſhafts H turn round to the right, into the ſame furrow near I, and the horſes with the ſhafts K turn to the left,

into the furrow near L, they regain their tracts, and move on, drawing the frames S and T, with the beam F, to which the harrows are faſtened by the chains G. The rollers in the ends of theſe chains run along the rods P R, and, without turning the harrows or machine, they return along the ridge as often as is found neceſſary to harrow it ſufficiently. One man in the middle of the ridge may direct the horſes on each ſide, and turn them any way by the bridle reins, as marked at N and O on the frames. The end of the beam F goes into mortiſes in the middle rails of the frames S T, and has liberty to move on the bolts N and O; ſo that if the horſes on one ſide of the ridge ſhould happen to go before thoſe on the other ſide, the wheels carrying the frames follow them without going to a ſide, or rutting the ridge, which would happen, if the ends of the beam were fixed, or had not liberty to play.

FIG. II.—Profile of the Machine and Harrows.

A B, The ſhafts by which the horſes draw the machine with the harrows.

C D, Is the frames that ſupport the ends of the beam, to which the harrows are attached, and in which the wheels E turn, when rolling in the furrows behind the horſes.

F G, The harrows with their teeth, which are equally tapered on both ſides, ſo that the harrows may be drawn from either end.

K, The chain that connects the harrows to the beam F. See Fig I.

H, The iron rods fixed at each end of the harrow, and on which the roller I, in the chain K, runs along, when the horſes and ſhafts turn round, and draw the machine the other way.

L, The iron bolts on which the ſhafts turn, and ends of the beam move.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

Query concerning a Machine for hummelling Barley.

SIR,

I ſhould be glad to be informed, through the medium of your very uſeful Magazine, whether any means have yet been fallen on for *compietely hummelling* barley (clearing it off the awns), either by machinery attached to a thraſhing mill, or to fanners. I am, Sir,

Your humble ſervant,

A CONSTANT READER.

BRANCH

BRANCH II.

REVIEW OF AGRICULTURAL PUBLICATIONS.

General View of the Agriculture of Cumberland, with Obſervations on the Means of its Improvement, drawn up for the Conſideration of the Board of Agriculture, by J. Bailley *and* G. Culley, 1797. *Printed at Newcaſtle, and ſold by* Meſſ. Robinſons, &c. *London.*

THIS article, together with the ſubſequent one, remained long on our board, having been repeatedly poſtponed to make room for more temporary matters. Though rather out of date, we cannot, however, paſs over a publication which contains ſo much information; more eſpecially, as the means therein ſuggeſted for improvement are judicious and intereſting.

CUMBERLAND, the moſt northern diſtrict on the weſtern coaſt, is of conſiderable extent, containing about 970,000 acres ſtatute meaſure, whereof nearly one half is in old enclоſures, and the remainder either improveable common, or uncultivated mountain land. The climate, on the whole, is wet, eſpecially during the autumnal months, which, leſs or more, is the caſe with all the weſtern parts of the iſland. The ſoil is of various qualities, but the moſt prevalent of the arable is a dry healthy loam, excellently adapted to the culture of turnips, and the breeding and feeding of ſheep. One diviſion of the mountainous diſtrict abounds with coal, lime, and lead ore, the other with ſlates and black lead. The whole is abundantly ſupplied with water of the fineſt quality; but, notwithſtanding the extent of ſea coaſt, none of its rivers can be ſaid to be navigable, the tide ſeldom flowing more than two or three miles up any of them.

The ſtate of farming muſt, almoſt in every branch, be regarded as far behind that of the conterminous diſtrict of Northumberland. Indeed, both phyſical and artificial cauſes contribute to impede the progreſs of improvement. The climate is not only worſe, but the ſurface more rugged, while property is divided into ſmaller parcels, the greateſt part being held under lords of manors, by that ſpecies of vaſſalage called *cuſtomary tenure*. Few leaſes are granted, and thoſe that are granted extend only to five, ſeven, or nine years. In a word, the huſ-

bandry of Cumberland is a full century behind, and its preſent ſtate affords deciſive proof, that the tenure, under which land is held, forms a moſt important branch of political regulation.

It may be remarked, that holding by *cuſtomary tenure* is not only pernicious and deſtructive to good huſbandry, but alſo to the intereſt of thoſe concerned; and that to enfranchiſe every perſon ſo ſituated, would be a meaſure founded on wiſdom and political expedience. The fines and heriots exacted entail poverty upon ſuch as poſſeſs under this abſurd tenure, and the various ſervices to which they are liable may be pronounced directly in the teeth of every agricultural improvement. If a law paſſed for emancipating thoſe who hold by this tenure, it might be eaſy to fix upon equitable terms for regulating the value of the right given up by the lord of the manor, in conſequence of ſuch an emancipation. The ſentiments of the intelligent ſurveyors are much in uniſon with thoſe now expreſſed. In page 226, under the head of improvements, they ſay,

'One great obſtacle to improvement ſeems to ariſe from a laudable anxiety, in the cuſtomary tenants, to have their little patrimony deſcend to their children. Theſe ſmall properties, loaded with fines, heriots, and boon-days, joined to the neceſſary expence of bringing up and educating a numerous family, can only be handed down, from father to ſon, by the utmoſt thriſt, hard labour, and penurious living; and every little ſaving being hoarded up, for the payment of the *eventful fine*, leaves nothing for the expences of travelling to ſee improved modes of culture, and to gain a knowledge of the management and profits of different breeds of ſtock; and be convinced, by ocular proofs, that their own ſituations are capable of producing ſimilar advantages. And even ſhould they be half inclined to adopt a new practice, prudence whiſpers that, ſhould the experiment fail, it would require the ſavings of many years to make good the deficiency.

'The *cuſtomary tenure* is allowed on all hands to be a great grievance and check to improvement. Would not this be beſt done away on the diviſion of commons, as was the caſe at Brampton, &c. where Lord Carliſle had 1-12th for his conſent as lord of the ſoil, and for enfranchiſing the allotments. There are other lords who aſk 1-4th for their conſent and enfranchiſing. The yearly value of the various cuſtoms, fines, &c. might be eaſily ſettled by commiſſioners; and twenty-five years purchaſe, on this value, be the price of enfranchiſement, which might be allowed out of the allotment, upon the diviſion of a common, or paid in money, at the option of the tenant.

'On theſe terms, neither party would have reaſon to complain; but, where a tenant cannot enfranchiſe under forty years purchaſe, it would be a humane act of the legiſlature to relieve theſe bondagers by law; or laudable in the Board of Agriculture to induce ſuch lords of manors to accept a fair equivalent for theſe dregs of vaſſalage.' P. 226—227.

Leaſes,

Leaſes, as already ſaid, are rarely given to tenants. With the majority of our readers this circumſtance will concluſively prove that agriculture is not in a forward ſtate, and that ſmall improvement may be expected while the ſecurity afforded by this tenure is withheld. We have, on various occaſions, ſtated our opinion as to the neceſſity of granting leaſes before tenants can be warranted to undertake improvements, and cannot avoid remarking, that it is truly lamentable to obſerve how inattentive the majority of Engliſh proprietors are to their own intereſt, laying the improvement of the country out of the queſtion, when they thus attempt to retain the tenantry in a ſtate of dependence, merely that their electioneering influence may be increaſed; for no better reaſon can be aſſigned. We are clear that more money is annually loſt, by thoſe concerned, in withholding leaſes, than would be required to purchaſe every ſeat in Parliament, even at the higheſt price underſtood to have been given.

From the chapter on implements we learn that *one* horſe carts are generally uſed; a practice undoubtedly beneficial to the owners, and to the public, by preſerving the roads from the exceſſive damage ſuſtained where large carts and waggons are employed. In forming road bills, an erroneous idea ſeems to have influenced our legiſlators, and induced them to beſtow ſomething like a premium on thoſe who uſe waggons, though it is evident that ſuch are eminently prejudicial to roads in every ſituation, but particularly in mountainous diſtricts. The opinion of the ſurveyors is as follows:

'The ſuperior goodneſs of the roads in Cumberland may, in a great meaſure, be attributed to the univerſal uſe of ſingle-horſe carts. Wherever waggons are uſed, they are the deſtruction of roads, eſpecially in hilly countries, where they are obliged to lock the wheels; the banks are in a manner ploughed up with them, and the nine inch wheels are, in reality, no more than three inch wheels, by the artful mode of laying on the middle courſe of tyre, which is *raiſed an inch above the reſt*; inſtead of being nearly exempted from tolls, every *horſe* drawing in a *waggon* ought to pay *treble* to what ſhould be exacted from a *horſe* drawing in a *ſingle-horſe cart*.' P. 236.

The advantages ariſing from incloſing commons are ſatisfactorily detailed, p. 186, &c. though it ſtrikes us, that if they were only *divided*, much benefit would be gained by thoſe who have an intereſt in ſuch lands. The ſtatute law of England, however, has always connected both branches of improvement, and, to the beſt of our knowledge, there is not an inſtance upon record, where diviſion has been made without the burden of incloſure tacked to it. Much of the waſte land is not of ſufficient value

to defray the charge of incloſing, and ſo cannot be divided under the exiſting ſyſtem; but were it of ſufficient value, the proprietors, individually conſidered, are more capable of being intruſted with the work than any body of commiſſioners, however reſpectable. That proprietors would do it more frugally cannot be doubted, and that they would ſeldom make an unprofitable attempt may be equally credited.

Nothing worthy of imitation can be ſelected from the tillage ſyſtem of the diſtrict. We are ſorry to ſay, that huſbandry is rarely executed upon judicious principles, and muſt reprobate the mode in which the arable land is reſtored to graſs as being equally barbarous with what prevails in the moſt worthleſs highland diſtrict. The ground is generally left to ſeed itſelf, and this practice is ſeverely laſhed by the ſurveyors. They ſay,

'On aſking a farmer at Uldale, why they ſowed no clover or graſs ſeeds, he replied, "*we have no occaſion, for the land is naturally girs-proud.*" Thoſe that are experienced in cultivation will readily admit that, after growing from ſix to twelve white crops in ſucceſſion, it can ſcarcely be otherwiſe than *graſs-proud*. There is certainly graſs in abundance, but of ſuch kind as no good farmer would wiſh to be poſſeſſed of. This barbarous ſyſtem is practiſed upon many dry loamy ſoils, which, after being thus left to graſs, cover amazingly faſt with moſs, probably owing to the bad cultivation and exhauſting crops of corn more than to the wetneſs of the climate, to which it is generally attributed.'—P. 189.

The ſection on ſheep huſbandry is intereſting. Two kinds appear to be bred in the county; one called *Herdwick's*, the ewes and wedders of which are polled, that is, without horns, though ſome of the tups are furniſhed by nature with that appendage. This ſeems to be a hardy breed, and tups are much ſought after from among them for improving the ſheep of other mountain diſtricts. The other kind are generally horned, high ſhouldered, and flat ribbed, carrying wool both coarſe and ſtrong. We concur in opinion with Meſſ. Bailey and Culley, that theſe breeds admit of great improvement.

'At Penruddock we obſerved ſome ſingularly rough legged, ill-formed ſheep; on aſking an old farmer, from whence they had that breed, or where they got their tups? He innocently replied, *Lord, Sir! they are ſik as God ſet upon the land, we never change any!* The latter part of this ſimple ſtatement we readily believe; but that *God ſet upon the land* ſuch ill-formed, unprofitable animals, we cannot ſo readily aſſent to; and rather think they have acquired their preſent ill-form, and bad properties, by the indolence and ignorance of the owners. We wiſh we could avoid adding, that the ſame practice which guides the men of Penruddock is too prevalent in every part of the country.'—P. 214.

The

The concluding chapter upon the *means* of *improvement* contains much ſound practical advice, which we hope will not be loſt upon the Cumberland farmers. Our limits will not, however, allow us to go farther than to add, that the ſame liberal and enlightened principles appear to have governed the reſpectable ſurveyors, as we formerly had occaſion to notice in their account of Northumberland. A thorough knowledge of rural affairs is conſtantly diſplayed, and the whole is preſented in perſpicuous language, which, at the ſame time, may be characterized as ſmart and appropriate.

N.

General View of the Agriculture of Weſtmoreland, with Obſervations on the Means of its Improvement, drawn up for the Conſideration of the Board of Agriculture by Mr A. Pringle *of Ballancrief. Printed at Newcaſtle,* 1797. *Sold by* Meſſ. Robinſons, &c. *London.*

THE author of this report, Mr Andrew Pringle, a ſhrewd intelligent farmer, here lays before the public a conciſe, and, we truſt, a correct account of the huſbandry of Weſtmoreland. Mr P. is one of the *Scottiſh farmers* who were called by the Board of Agriculture to inſpect the rural matters of our ſouthern neighbours; but poſſeſſing a greater ſtock of prudence than his brethren ſent upon the Yorkſhire miſſion, the reſult of his labours has of courſe been more favourably received. Generally ſpeaking, he appears to have contented himſelf with deſcribing things as they were, without entering upon the hazardous taſk of ſhowing how they might be amended. Where an abuſe came in his way, he handles it with delicacy, and thereby has eſcaped that torrent of abuſe which, both from above and below ſtairs, was thrown upon his friends who viſited Yorkſhire.

The introduction to the report is a flowery performance, but excellently calculated to make the Board think well not only of themſelves, but alſo of the cauſe in which they were engaged. Some preliminary obſervations by the worthy biſhop of Landaff follow, which we are diſpoſed to regard as conveying an over ſanguine view of the benefits that may be gained from planting timber trees. Though ready to admit that conſiderable improvements may be made on the waſte lands of Weſtmoreland by raiſing plantations adapted to the ſoil and climate; nay more, that many of them are ſuſceptible of improvement in no other

other way; yet, as the value of ſuch improvements can in no caſe be aſcertained beforehand, and, in fact, is regulated entirely by the degree of attention beſtowed in planting, fencing, and training up the young trees, we are led to view every previous calculation with a ſceptical eye. Unleſs the different operations are carefully executed, no plantation, however favourable phyſical circumſtances may be, can ultimately be completely ſucceſsful.

We ſhall now look at the report.—Weſtmoreland is an inland diſtrict, containing about 540,000 ſtatute acres, and 35,000 inhabitants. The ſurface, in general, is hilly and mountainous, conſequently not well calculated for tillage. Few minerals are to be found in its bounds except limeſtone. Several extenſive and beautiful lakes are formed betwixt the mountains, which afford much pleaſure to travellers who viſit them from all quarters of the iſland.

The ſtate of property is nearly ſimilar to what we have already mentioned in our account of the conterminous county of Cumberland; therefore it is unneceſſary to repeat the obſervations which occurred upon reading this part of the report. The houſes of the farmers are deſcribed as inconvenient, being ſituated in little ſtraggling villages; and, as for cottages, very few are to be found within the precincts of the county. Farms are ſmall, few exceeding L. 100 of yearly rent; but it muſt be remarked, that the yeomanry, here called *ſtateſmen*, who farm their own lands, "live poorly, and labour hard; and ſome of them, particularly in the vicinity of Kendal, in the intervals of labour from agricultural avocations, buſy themſelves in weaving ſtuffs for the manufacturers of that town."

Huſbandry may, in ſome degree, be eſtimated from what is given in the following paſſage. The obſervations which follow are ingenious and juſt.

'It is painful to one, who has in his compoſition the ſmalleſt ſpark of knight errantry, to behold the beautiful ſervant maids of this country toiling in the ſevere labours of the field. They drive the harrows, or the ploughs, when they are drawn by three or four horſes; nay, it is not uncommon to ſee, ſweating at the dung-cart, a girl, whoſe elegant features, and delicate nicely proportioned limbs, ſeemingly but ill accord with ſuch rough employment.

'A judgment of the refinement and civilization of a people has been often formed from their treatment of the fair ſex, and in this reſpect France was formerly held up to the world as a model. Unfortunately the manners of nations are too often painted by thoſe who have been converſant only with perſons in what may be called high life; but were it allowable to apply this rule even to France, and to look for ſpecimens into the lower orders of ſociety (and it is there ſurely that the moſt faithful repreſentatives of national character or manners are

to be met with), it would be found that the women, even in the boaſted days of her monarchy, were doomed to the ſevereſt labour, to load the dung-cart, to ſaw the wood, and to threſh the corn.'—P. 265—266.

In the chapter devoted to the management of arable land we obſerve, that when graſs land is *overgrown with moſs*, it is broken up with the plough in the beginning of March, and ſown about the firſt of April with oats. Barley is taken as the ſecond crop, to which two or three ploughings are given according to the ſtate of the weather, and *eighty or one hundred* cart loads of ſtable dung are laid on the cuſtomary acre of 6760 ſquare yards, which certainly is a moſt extraordinary dreſſing. The third crop is oats, and the land ſeems to be then left to *ſeed* itſelf. This appears to be the general practice, though exceptions are given, which, we truſt, for the credit and intereſt of the diſtrict, are yearly on the increaſe.

The chapter on graſs throws additional light on the rural ſyſtem of the diſtrict. The author, p. 274, ſays,

'Every occupier of land, whether *ſtateſman* or *farmer*, having it in his power to keep any number of cattle, through the months of ſummer, upon *joiſted* fields, where they may be kept at a cheap rate, or upon commons, where they may be kept almoſt for nothing, it is a principal object with him to provide for them plenty of winter food. Hence his attention is chiefly directed to his crop of hay. It has been already ſtated, that the quantity of land, at preſent under culture, does not exceed one-fourth part of the whole county, or 135,000 acres. Had all the arable land in the county been cropped with corn three years out of twelve, there would have been preciſely one-fourth part of the whole in tillage: but there are many paſtures of an inferior ſort, which are very ſeldom ploughed, and in the high parts there is a much ſmaller proportion of the land in corn than there is in the low parts. In the very extenſive manor of Ravenſtonedale, although there are between 2000 and 3000 acres incloſed, there are not ſixty acres of corn; and it is probable that there are not in the county more than 20,000 acres under crops of corn in one year. The remaining 115,000 acres are cût for hay, or depaſtured with fattening beaſts and riſing ſtock, or with cows applied to the purpoſes of the dairy. From ſuch an inſpection of the county as was had with a view to the framing of this report, the proportions uſed for theſe different purpoſes cannot be even gueſſed at, but that for hay is perhaps the moſt conſiderable. A prejudice againſt the artificial graſſes prevails ſo generally over all the county, that it may be almoſt literally ſaid they are never ſown. When the land has produced a few crops of corn, and it is judged that the moſs is quite deſtroyed, it is left to itſelf; and ſuch is the humidity of the climate, and ſo ſtrong is the vegetation of weeds and natural graſſes, that the very firſt crop has, by actual experiment, been found to produce 120 ſtones of hay per acre, weighed from the field. As every perſon who expects to have occaſion for hay hires a field to ſupply him with

with that commodity, it is not often that hay is ſold in large quantities; and it is ſtill ſeldomer that the quantity raiſed upon an acre is exactly aſcertained. When ſold, it may bring from 4d. to 6d. a ſtone in winter and ſpring, or from 4s. to 5s. a cubic yard. A cubic yard, in the lower part of a well-preſſed mow, may contain twelve ſtones of hay, and has been known to ſell as high as 7s. or 8s. In the ſouthern and in the eaſtern parts of the county, much attention is paid to the making of compoſt dunghills, which, with the dung that remains after manuring for the barley crop, are always laid upon the hay grounds, and are thought conſiderably to retard the progreſs of the moſs. At Kendal and other places, where dung can be purchaſed, they are manured after the firſt crop, and every third year while they continue in graſs.'—P. 274—275.

A conſiderable extent of land remains in a waſte or natural ſtate, which is chiefly depaſtured with flocks of ſheep. In winter the ſheep are brought down to the low encloſed fields, except the wedders, which are left to ſhift upon the hills. After dropping their lambs, the ewes are ſent back to the waſtes, where the whole flock paſtures indiſcriminately without an attendant. Great numbers of Scots ſheep are annually purchaſed at Stagſhawbank fair, and grazed on the waſtes; and, in addition to the ſheep, numerous herds of black cattle are depaſtured on the commons. The value of the paſturage appears to be trifling, though perhaps, like other articles, it may have increaſed ſince our author viſited Weſtmoreland.

'It is generally underſtood that no perſon ſhall ſend to graze on any common more ſtock than he can winter upon his eſtate or farm, in right of which he has a title to paſturage on that common. This regulation, however, is little attended to, and the commons are almoſt always overſtocked to ſuch a degree, that many perſons do not think it worth while to avail themſelves of their right of commonage.

'On ſtinted paſtures, it is very ordinary to hire out the right of keeping both cattle and ſheep. A ſummer's graſs for an ox or for ten ſheep, on Forreſt Hall and Moſley common, is let at 4s.; on a part of Troutbeck common, where no ſheep are allowed to feed, an ox may be kept for 3s. 6d. and, on another part of the ſame common, *an ox or ten ſheep may remain all the year for ſixpence.*'—P. 280.

Some uſeful hints are given under the head of *means of improvement.* The ſowing of artificial graſſes is ſtrenuouſly recommended, and certainly with great propriety, provided the ground is ſuitably prepared beforehand for their reception. Turnips are alſo conſidered as a root well calculated for the climate and ſoil of the Weſtmoreland vallies, and the benefit of introducing more approved rotations of cropping is elucidated. With regard to the waſtes and commons, the author, like every other

other perſon who has ſtudied the ſubject, declares, that the interpoſition of the Legiſlature is loudly called for, ſo as they may be rendered of greater value to the ſtate; for, at preſent, he thinks they are of little or no uſe, either to thoſe having right of commonage, or to the nation at large.

On the whole, the Survey of Weſtmoreland is a reſpectable performance, and may be highly beneficial to the huſbandmen of that diſtrict. It is well written, and affords full proof that the author poſſeſſes literary talents of a ſuperior kind. If he has not, in every caſe, probed abuſes to the bottom, or pointed out how ſuch might be removed, he has certainly ſhown that any deficiency of this kind did not proceed from want of ability to aſcertain abuſes, or to ſelect the beſt and moſt appropriate remedies by which they might be rectified or removed.

N.

Obſervations on the Formation and Management of uſeful and ornamental Plantations; on the Theory and Practice of Landſcape Gardening; and on gaining and embanking Land from Rivers or the Sea. Illuſtrated with Plates. By J. Loudon, 342 *pages. Edinburgh,* Conſtable *and* Co. *London,* Longman, &c.

Rural economy may be claſſed under two different heads: 1. What relates to the culture of the ground, and the management of domeſtic animals. 2. What belongs to the ornament or decoration of the earth. The firſt claſs undoubtedly deſerves our particular attention at all times, being cloſely connected with the continuance of our exiſtence. The ſecond merits only a ſecondary conſideration, not being abſolutely neceſſary to the welfare and proſperity of mankind.

The ſubjects treated of in this volume are, in ſeveral reſpects, allied to the ſecond branch of rural economy; for they can ſcarcely be attended to, if the practice of agriculture has not been previouſly much improved, and a ſuperabundance of capital provided for executing ornamental and decorative works. The raiſing of fences, the planting of timber trees, and the embankment of our ſhores, are, however, ſo neceſſary, and, in many caſes, ſo profitable undertakings, that we cannot avoid noticing what is ſtated on theſe important topics.

Mr Loudon, in the firſt chapter, treats "*on the formation and management of uſeful and ornamental plantations.*" In the ſecond, "*on the theory and practice of landſcape gardening.*" In the

the third, "*on a new mode of gaining and embanking land from rivers or the ſea.*" The firſt and laſt ſhall occupy a little of our attention. Indeed, the novel way and manner in which theſe different ſubjects are diſcuſſed, ſeem to call for the ſerious conſideration of all perſons who have ſuch undertakings in view.

After detailing, in a very ſenſible and judicious introduction, the advantages which ariſe from plantations in this country, and ſtating, 'that wood is the greateſt ornament of our globe, and the moſt eſſential requiſite for the accommodation of civilized ſociety,' Mr Loudon proceeds to ſhow what are the objects of planting, which he reduces to three heads; namely ornament, profit, and ſhelter, which certainly may be conſidered as a correct claſſification. Paſſing over what is urged under the firſt head, as rather foreign to our deſign, we ſhall extract, from p. 33. *et ſeq.* what is ſaid concerning the other two objects, remarking only here, that the author ſeems fully maſter of his ſubject.

'Where *profit* or *value* is the prime object in view, there will neceſſarily be a particular product to be grown, from which it is to be derived. This product may conſiſt of all, or any of the different parts of a tree, as the roots, trunk, branches, bark, &c. or of the eſſence of any of theſe parts, as the ſap, reſin, gums, tar, pitch, &c. Timber and bark, however, are the products moſt commonly raiſed; and theſe and their properties vary infinitely in different degrees. The timber of ſome is brittle, of others tough, of others hard, and of others ſoft:—and the bark is of different degrees of aſtringency, ſweetneſs, or acridity. Theſe qualities and parts of trees are all ſuited for different purpoſes in the arts; and thoſe of them which it is moſt deſirable to raiſe muſt depend entirely upon the probable conſumption, the ſoil, ſituation, and other circumſtances. Wherever profit is the principal conſideration, the products moſt in demand ſhould be known, and the trees moſt productive of theſe, in the given ſoil and ſituation, muſt alone be planted. This may point out the neceſſity of attending to the natural ſoils and ſituations of trees and ſhrubs, the qualities of their products, their uſes in the arts, and their relative value.

'Where *ſhelter* or *ſhade* is the principal conſideration, the qualities of each require to be inveſtigated, and thoſe forms uſed which are beſt adapted for that purpoſe.

'The object of ſhelter is to produce heat; to protect cattle and paſture from the inclemency of the weather. Hence, the trees uſed for this purpoſe ſhould be clothed with branches and foliage from the ground upwards. The foliage ſhould be perpetual, and, if poſſible, a non-conductor of heat, ſuch as that of the reſinous tribe of evergreens. This may be thought too nice a diſtinction; but any perſon would be ſenſible of the difference, if, in a windy day, he were to ſtand alternately under the ſhelter of a *holly* and a *ſpruce* of equal thickneſs.

'The object of ſhade is to produce cold, that men or cattle may enjoy the cool refreſhing breeze during the mid-day ſun. For this purpoſe,

purpoſe, it is eſſentially neceſſary that the ſtems of the trees be free from branches to a conſiderable height, in order to promote the free circulation of the air. It is true, moſt trees may be trained in this form, but the operation would hurt ſome kinds, while others again are greatly improved by pruning. The ſhade of ſome trees is pernicious, and ſhould be guarded againſt; others are ſo thin of boughs and leaves that the rays of the ſun will pierce through between them; and theſe alſo muſt be rejected. This may ſhow the neceſſity of attending to the nature and kinds of trees that are planted for either of theſe purpoſes.' P. 33—36.

The ſecond ſection preſents an account of the *characteriſtical diſtinctions and particular properties of trees and ſhrubs*, arranged under twenty-two ſeparate heads. Each of theſe are diſcuſſed in ſuch a clear and diſtinct manner, as cannot fail to yield ſatisfaction to ſylvian amateurs. Upon the value of timber trees, the author ſays:—

'The *relative value* of timber depends almoſt entirely upon local circumſtances.

'Oak and elm, proper for ſhip-building, growing in the neighbourhood of a dry dock, will be more valuable than if it were a hundred miles up the country.

'Undergrowth of dog-wood, ſallow, and alder, in the neighbourhood of a gunpowder manufactory, is of great value; but, at a diſtance, it can be uſed only as fuel, &c.

'There are, however, ſome kinds of wood that, from their univerſal application, are valuable every where, ſuch as the *oak*, the *elm*, the *aſh*, the *beech*, and to which may be added, as the moſt valuable, the *larch*.

'There are other kinds which, from their ſcarcity, are valuable every where, as the *box*, the *holly*, and the *yew*. The lighter products, ſuch as *birdlime*, *potaſh*, *turpentine*, *pitch*, &c. may be reckoned equally valuable every where.

'The tree that will be moſt valuable in a given ſituation may not grow in a given ſoil. In this caſe, the tree that will come to the greateſt perfection in that ſoil will generally be found the moſt valuable.

'A wood, not valuable from local circumſtances, may, by manufacturing it on the ſpot, in order to render carriage leſs expenſive, or by ſome ſuch method, be rendered much more valuable.

'From the general introduction of good roads and canals, and the ſpirit for increaſing theſe, there can hardly be a ſituation in which plantations will not be valuable for timber; and it is impoſſible to conceive one where the other products will not be of great value.'—P. 56—58.

Section third is *on the arrangement of trees and ſhrubs*. Section fourth *on the diſpoſition of wood*, ſo as the greateſt poſſible advantage may be derived from particular ſituations. Here Mr Loudon ſtates, (p. 83.) that—

'Taking the country in a general point of view, the hills ſhould be wooded;

wooded; the riſing grounds betwixt the hills and the vallies diverſified with gentlemen's ſeats, paſture lands, and ſome corn fields; and the vallies themſelves kept in a ſtate of almoſt perpetual aration.

'Moſt of theſe vallies, to prevent the ſtagnation of the air, and to ſuit the particular mode of farming for which they are adapted, ſhould be free from plantations, and ſometimes even from hedges. They ſhould preſent, in autumn, broad flat ſhades of rich yellows, interſperſed with farm-ſteadings, and relieved by roads, canals, and rivers, ſuch as the Carſe of Gowrie and Strathearn appear from the ſurrounding mountains.

'Upon the riſing grounds and the ſides of hills, the caſtles, manſions, towns, and villages, with every variety of paſture and wood, interſperſed with ſtreaks of corn fields, would form a contraſt with this fore ground; and the mountains, almoſt wholly clothed with wood, would form a grand back ground to this rich and noble ſcene.

'There is nothing of ſo great importance as the ſituation of wood, whether we look to the general appearance of a country, and the improvement of its climate, or to the beauty and value of individual eſtates. All other operations that can be made about a place are, comparatively, of little importance. It is the wood, like the ſhades in a picture, that gives the effect; and as it is by the ſituation and relative connexion of theſe ſhades, that an expreſſive or unmeaning picture is produced by the painter; ſo, by the ſite and connexion of plantations, a place is either deformed or beautified by the planter. Even ſmall groups and detached trees, like the laſt touches in a picture, are of the utmoſt conſequence; and every painter knows, that, when theſe are laid on by an unſkilful hand, they never fail to ſpoil the whole piece.

'It is lamentable to ſee the plantations which are daily making at a conſiderable expence, without any regard to this principle. In the dull levels of England, it may be thought of leſs conſequence; but, in Scotland and Wales, where the grounds are beautifully varied by nature, it is of the utmoſt importance. In leſs than half a century, wood will completely change the appearance of a gentleman's place, and of the whole country; and thoſe who underſtand the ſubject will allow, that there is a great danger of the change being made for the worſe. Scotland, at preſent, is a pleaſant country, as expreſſive of a peculiar character. If that character is partially changed, the effect will be diſguſting; but change it completely, and the expreſſion will be infinitely ſuperior to its preſent ſtate, and much more rich and noble than England, or almoſt any other country.

'That range of mountains called Pentland Hills, in the neighbourhood of Edinburgh, are well known. Now, ſuppoſe all the country around them wooded, (that is, the trees about gentlemen's places, and the hedgerow timber grown up), while the hills are left naked and bare, in place of being a grand feature in the country, they will be a ſtriking deformity. But ſuppoſe them properly varied with wood, their paſture, climate, and appearance, will be greatly improved; they will be at once the nobleſt ornaments to the country, and of ten times their preſent value to the proprietors. P. 83—86.

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The fifth ſection is concerning '*the outline of plantations*,' wherein the author declares war againſt ſerpentine lines. The ſixth treats '*of the different kinds of plantations*,' and contains much uſeful information on the advantage of raiſing oak undergrowth in woods. We do not mean to follow out the calculations made reſpecting the profit gained in ſuch caſes, though we are inclined to believe that our author preſents us with exaggerated eſtimates. It is a difficult buſineſs to ſpeak with preciſion concerning profits, realized only at a diſtant day, and which, thoſe who plant, ſeldom live to reap; and it deſerves attention, that the riſk of a total failure is never taken into account by thoſe who ſpeculate upon the advantages of planting woodlands.

Section ſeventh is '*on ſheltering young plantations*;' a ſubject, we confeſs, little attended to, though the neceſſity of it ought never to be forgotten by thoſe who embark in ſuch undertakings. The eighth ſection is ſo much to our mind, that we cannot refrain from extracting the whole of it.

'Notwithſtanding all that has been written upon this ſubject, and the many facts brought forward to prove the propriety and ultimate economy of preparing the ſoil previouſly to planting; the operations of moſt gentlemen ſhew that they are doubtful of the ſubject, or ignorant of its importance. It is needleſs, however, to add any thing to what has already been ſaid; for it is unreaſonable even to ſuppoſe that a ſquare yard of earth, matted and conſolidated with the roots of heath or graſs, can be penetrated by the delicate fibres of a young plant juſt brought from the nurſery; and ſtill more abſurd to imagine that it can find ſufficient nouriſhment in the compaſs of the pit in which it has been planted. Thus, in plantations made by pitting and planting, whatever be the nature of the ſoil, it will frequently be found, that to ſupply the deficiencies by death that occur for two or three years after planting, will require a ſum equal to that which would have prepared the ſoil; while thoſe that ſurvive are ſo choked with graſſes or heath, and become ſo coated with moſs as to make no progreſs. The pine and fir tribe, it is true, are leſs liable to this than others, as they ſoon cover the ſurface, and deſtroy all vegetation; but I apprehend that the deciduous kinds are more checked by it than moſt people imagine.

'But where the ſoil is prepared, the plants ruſh up to trees with vigour and alacrity, and ſoon begin to yield returns to the owner. Nor is the additional expence of preparing the ſoil conſiderable; in many caſes, it will be more than repaid by the green crops, as potatoes, turnips, &c. which may be raiſed on it for two or three years after planting; and where no green crop can be raiſed, the ſaving in plants and planting, (as few or none require to be replaced), will entirely, or nearly, defray the expence of preparation.

'Thus, independently of timber produce, it appears that the additional expence of preparing the ſoil will generally be repaid the ſecond

or third year after planting: if not poſitively by vegetable produce, at leaſt negatively by preventing further expences. But if we conſider the returns in timber produce, it may appear aſtoniſhing that any ſhould be ſo blind to their own intereſt as to neglect the preparation of the ſoil. If we ſuppoſe that trees grow only twice as faſt where the ſoil is prepared, as where it is not, then a plantation worth 100l. in fifty years, had the ſoil been prepared, would have been worth 200l. in the ſame time, or worth 100l. in twenty-five years. But every one will allow that all kinds of deciduous trees will grow four or ſix times, and often ten times, faſter in prepared, than in unprepared ground; and, of courſe, the return of profits will be correſpondent.

'The ground being drained and cleared, as far as neceſſary, of ſurface incumbrances, the mode of preparing the ſoil will vary according to circumſtances.

'Where a conſiderable extent is to be planted, the ground ſhould, if poſſible, be prepared by the plough; by autumn or ſummer fallowing; or, in very rough moors, &c. by fallowing two ſeaſons; and trench-ploughing ſhould be added to the fallowing wherever it can be accompliſhed. This mode decompoſes the organic matter, and pulverizes the ſoil much more completely than trenching with the ſpade, while it will not coſt above one third the expence.

'In places inacceſſible to the plough, the ground ſhould be prepared with the ſpade, either by digging or trenching.

'In ſteep banks, or places much covered with ſtones, or other impediments to digging or trenching, or where there may be danger of the winter rains carrying away looſe ſoil, pits ſhould be made the ſummer previous to the planting ſeaſon.—One pit being opened, the earth of the next ſhould be thrown into it, with the ſurface undermoſt. By the time the pit is re-opened, the ſward will be rotted, and ſhould be incorporated with the reſt of the ſoil in putting in the plant.

'Other places ſtill more difficult may be planted by ſlits; or by putting in acorns, aſh keys, or other tree ſeeds; many of which will grow in crevices of rocks and precipices, where little or no earth can be ſeen.' p. 113—119.

The ninth ſection treats '*of the ſize of plants and mode of planting or ſowing.*' In extenſive plantations, Mr L. recommends planting in rows, ſo as a horſe-hoe may be introduced; but, in thoſe of an ordinary ſize, his opinion is, that the plants ſhould be put in irregularly, or, as he emphatically expreſſes himſelf, '*irregularly irregular.*' He is alſo ſtrongly in favour of planting acorns where oak trees are to be raiſed, and gives good reaſons in ſupport of this recommendation.

What is ſtated in the tenth ſection, deſerves the attention of every perſon who wiſhes to poſſeſs a thriving plantation. Unleſs the ſoil is properly cultivated during the minority of the plants; unleſs it is ploughed or digged annually, and moved often with hand-hoes till the trees cover the ſurface, it is not to be expected

that

that ſucceſs can follow any plantation, however favourably circumſtanced in other reſpects. That theſe operations are too much neglected, we confeſs; and this we conſider as the chief cauſe why ſo many plantations do not ſucceed. We have obſerved premiums and medals conferred upon thoſe who planted the greateſt number of trees, but cannot recollect of a ſingle reward having ever been offered to induce people to take care of them afterwards; though it does not ſignify any thing to plant trees, if they are not properly trained up and protected.

Section eleventh is '*on the pruning of trees*,' which the author, under certain circumſtances, recommends, becauſe it occaſions more timber to be thrown into the trunk. Reſinous trees, however, he thinks, ſhould not be pruned till they ſhow marks of decay. Thinning trees, he conſiders as an operation of more importance than pruning, and ſupports his opinion in the twelfth ſection by ſome ſtrong arguments.

The thirteenth ſection is '*on encloſing, and of different kinds of fences.*' To make a plantation of trees, and neglect to encloſe it ſufficiently, is a moſt prepoſterous meaſure; and yet, how often may ſuch neglect be juſtly charged againſt the owners of woodland! The author gives a diſtinct account of the different kinds of fences that may be uſed for protecting young plantations, ſuited to particular ſituations and circumſtances. What he ſays on live fences is very much to the purpoſe.

'*Live fences* include all kinds of hedges, many excellent ways of rearing which are well known.

'Thorn is the beſt plant where the ſoil is good; crab the next beſt. Beech, horn-beam, berberry, &c. where the ſoil is too dry or thin for the thorn. Elder, birch, poplar, alder, &c. where it is too moiſt for any of the above.

'Before a hedge is planted, the ground ſhould be well cleaned and pulverized. A ſtrip ſix or eight feet broad may be fallowed and trench-ploughed the preceding ſummer. Where the ſoil is naturally good and deep, the thorns may be planted along the centre of the ſtrip; or, if it is thin and too moiſt, it may be planted on double earth, which is accompliſhed by forming a ditch of depth and width according to the water it is to contain, or the cattle it is to defend from the hedge. Every hedge ſhould be well cleaned and defended from cattle for five or ſix years after it is planted; and in the mean time, its ſides ſhould be trained in a tapering form with the hedge-knife.

'The great art of preſerving hedges fencible, after they are raiſed, conſiſts in keeping them three or four times broader at the bottom than at the top. By this means, every part has the full advantage of the ſun, air, and rain: it grows equally thick throughout, and particularly below, where it is moſt neceſſary. But when a hedge is trained broader

at top, or even perpendicular, that half of it next the ſurface is under the drip of the reſt; and, deprived of ſun and rain, it ſickens; produces few or no young ſhoots; the ſap runs all to the top of the hedge; it gets quite bare below; and ſoon becomes unfit for a fence. Every accurate obſerver will allow that this is the caſe, more or leſs, in the greater part of what are generally conſidered as the beſt kept hedges, ſuch as thoſe ſurrounding market gardens in the neighbourhood of towns, which, though they are annually cleaned and ſhorn with great care, are commonly ſo naked below, as to admit hares, dogs, ſwine, &c.

'In pruning a hedge, the bill or knife ſhould be uſed as preferable to the ſhears. They bruiſe off, rather than cut over, the twigs; and hence, every ſhorn hedge throws out a great number of ſmall ſhoots from the ſurface only, which in time forms a kind of coating or network all over the hedge, encloſing the naked ſtems within, and excluding them from the air. But the knife cuts off the twigs clean and ſmooth. By this means, they throw out fewer ſhoots, but thoſe are of greater ſtrength; and the hedge is equally thick in every part, without being crowded. This excellent mode of pruning hedges is practiſed in ſome of the ſouthern counties of Scotland, where they are productive of many other advantages.' p. 142—145.

Where ſtone walls are uſed to fence plantations, we obſerve the following excellent hints given with regard to the mixing of lime and ſand for mortar. Maſons, in theſe days, perform this important operation very ſlovenly.

'When lime is employed, if, in place of ſlacking it, and letting it lye to mellow or four for ſome weeks, no more were ſlacked and made ready for uſe than what was worked up the ſame day;—if the ſand were clean and rough, and well incorporated with the lime, and were the coping put carefully on; theſe walls would laſt an inconceivable length of time. Lime uſed in this way binds immediately; and, the longer it ſtands, becomes the harder. Hence the ſurface of the wall would acquire a coating of moſſes which would add greatly to its beauty, and prevent decay.

'The ancients uſed lime in this way; and their buildings, both walls and houſes, though under every diſadvantage, remain as monuments of their ſuperior knowledge in this particular. But the moderns in general deſtroy their mortar before they uſe it: it is ſaturated with fixt air, or, in common language, has *loſt hand* before it is put in the walls: hence the weakneſs, frailty, and ſpeedy decay of modern buildings, thoſe of rubble work in particular.

'There are few who will form a proper idea of the importance of this hint. I ſhall only aſk, Whether it is moſt deſirable to build walls that will ſtand for centuries with little or no repair, or to build them in the common way, when, if they ſtand half that time, they have to be *pointed* every eight or ten years; both modes coſting the ſame original expence? p. 146. 147.

Section fourteenth is concerning *hedge-row* timber. However ornamental

ornamental it may be to a country to have trees planted in hedge-rows, we are in duty bound to declare that the practice is injurious to agriculture, and ought not to be imitated. Any profit that can be gained from the beſt timber trees, will not compenſate the loſs ſuſtained upon a corn field, eſpecially in a wet ſeaſon, when trees are in its neighbourhood. In every ſeaſon, the loſs is great: the roots being firſt in hand, extract the precious moiſture which ought to go to the ſupport of the tender corn plant. Experience has ſhown us, that where trees are planted in hedge-rows, not leſs than twenty feet of ground, on each ſide, is ſacrificed, independent of the loſs ſuſtained upon the remainder of the field, from the want of ſunſhine and air, eſpecially when a wet autumn happens. Utility ought, in no caſe, to be renounced for ornament. Indeed, it is impoſſible that any practice can in reality be ornamental, which has a miſchievous tendency.

In the fifteenth ſection, many good things may be found *concerning the management of neglected plantations*; and the author's opinion of the preſent ſyſtem is ſuch as to induce him to declare that there are few plantations in the iſland but what will come under this deſcription. With ſome reſtrictions, we have no heſitation in adopting this opinion; becauſe the greateſt number of thoſe who planted trees, ſeem to have loſt ſight of all care for their future management. The woods at Tynningham in Eaſt-Lothian, appear to have been ſyſtematically managed; therefore, a degree of ſucceſs accompanied them, proportional to the judgement and vigour which it appears animated the noble perſonage who directed the buſineſs. To bring a neglected plantation into good order, will require more trouble and expence than would have been neceſſary, in the firſt inſtance; and, after all, the amendments are but partial and precarious.

Section ſixteenth is '*on the felling of wood*,' and the next and laſt one '*on the particular uſes and products of trees*.' In theſe ſections we obſerve much valuable information, though it would lead us too far, were we to examine them minutely.

The ſecond chapter, '*on the Theory and Practice of Landſcape Gardening*,' being very diſtantly connected with the deſign of our work, ſhall be paſſed over without examination. In general, however, it may be obſerved, that the author is a keen diſciple of the celebrated UVEDALE PRICE, and, of courſe, hoſtile to the ſyſtems of Kent and Brown. He contends that nature ſhould be followed on all occaſions, 'making every ſprightly work of art ſerve for her embelliſhment.'

Leaving thoſe themes for reviewers of a different deſcription,

we come to the laſt chapter, which contains 'obſervations *on a New Mode of Gaining and Embanking Land from Rivers and the Sea*,' which undiſputedly is a buſineſs of much importance. Next to cultivating land well, already in our poſſeſſion, the acquiſition of more, by the erection of embankments, muſt be regarded as an object meriting the moſt ſedulous attention.

The embanking of our ſhores, or the art of gaining land from the ſea, has been ſeldom practiſed, and is ſtill leſs underſtood in Great Britain. Various reaſons may be aſſigned why the practice has hitherto been neglected, which, it is to be preſumed, will at a future period ceaſe to operate. Till within theſe few years paſt, the extent of cultivated land was ſufficient to raiſe proviſions for the uſe of the inhabitants; hence, to acquire more from the ſea, ſeemed an unprofitable object to individuals, and not called for on account of any advantage which might be derived therefrom by the public. Theſe obſervations are ſupported by the amazing quantity of waſte ground to be found in every inland county, even at the very gates of the metropolis, ſome of which is naturally calculated to produce the fineſt crops of corn and graſs, provided the legal fetters, under which it is bound, were broke aſunder, and opportunity given to the owners for improving it in a ſufficient manner. As ſuch ground can be brought under cultivation at infinitely leſs riſk and expence than muſt be incurred where acquiſitions are made from the ſea, we are not to wonder that the laſt mentioned improvement proceeds with ſlow ſteps, when the other remains incompleted. In fact, the expences of embanking are great; whilſt, after all, the ſlighteſt error in the plan, or defect in the execution, may render the whole abortive.

Under theſe circumſtances, it cannot excite ſurpriſe, that few attempts have hitherto been made, in Britain, to execute this branch of improvement; and we are almoſt perſuaded that, in our day, the progreſs made therein will be comparatively ſmall. Still this does not deduct from the merit of thoſe who have ſtudied the ſubject, becauſe their plans may be carried into action at a future period, when perhaps an acquiſition of ground may be imperiouſly called for to meet the public neceſſities. That, in numerous inſtances, embankments might be made with ſucceſs and profit, we readily acknowledge, though we are not diſpoſed to believe that, in the preſent ſtate of Britain, many people will be found ready and willing to embark in ſuch undertakings.

But having made thoſe general remarks, which we were in duty bound to offer, we proceed with pleaſure to examine the information communicated by Mr Loudon.

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In the firſt ſection of this chapter, Mr Loudon treats of the cauſes of the failure of embankments, which he reduces to two, namely, a defect in the form, and imperfectneſs of materials that may have been uſed. With reſpect to form, he ſays that embankments are generally too narrow at the baſe in proportion to their height; hence, they are unable to withſtand the weight of the ſea in high tides. With reſpect to materials, he ſeems to think it of little conſequence what the body of the embankment is conſtructed with, providing thoſe on the ſurface are of a proper kind. Where the ſlope next the ſea is not great, he gives it as his opinion, that no material will do for the ſurface, that is not equal in effect to a cloſe-joined pavement; and, even when the ſlope is conſiderable, that cauſewaying is inferior to a good coat of gravel.

Section ſecond, (erroneouſly printed as the *firſt*) is '*on the moſt ſecure Natural Shores and Banks of Rivers, and cauſes of their Security.*' Here the author judiciouſly remarks, that the ſhores leaſt liable to be damaged, are thoſe which have a gentle eaſy ſlope from the bed of the ſea or river to the top of the ſhores, or ſuch as are compoſed of ſolid perpendicular rock. To imitate theſe natural embankments, is therefore the true way of rendering artificial ones effective.

In ſection third, p. 316, the following uſeful admonition is given:

'Whatever kind of embankment is conſtructed, proper ſluices and and tunnels, with valves next the ſea, ſhould be placed here and there according to circumſtances, to allow the water collected within to paſs off, and to admit the ſea at pleaſure, either for the ſake of depoſiting ſand or mud to raiſe the ſurface of the land gained, or to flood the ſoil, in order to produce ſalt, merſe, &c. &c.

The next ſection is '*on the materials with which embankments are conſtructed.*' Mr Loudon here deſcribes a good built wall, properly cemented with well prepared mortar, as the beſt defence where the ſhore is abrupt, and that ſloped embankments may be made of common earth, clay, mud, ſtones, or a mixture of theſe, which will in a ſhort time form a ſolid maſs. Here he judiciouſly recommends that the materials uſed ſhall be conformable to the different angles which the ſurface of the embankment is meant to form. The fifth ſection is on the '*beſt way of preſerving embankments while they are conſtructing,*' which has always been conſidered as the moſt difficult part of the proceſs. Here we think the author treats his ſubject ſuperficially.

Section ſixth is '*on the expence of embankments,*' which to be ſure is an abſtruſe ſubject, and on which little ſatisfactory light

can be thrown. Section ſeventh is '*on the management of land gained from the ſea*;' and the author concludes by ſtating, that every kind of land gained from the ſea, is of great value, ſeeing it may be flooded, and rendered artificially rich, by freſh water, and by the ſea, at all times, or as often as the owner may judge it neceſſary.

We have now examined a work which promiſes to be of ſome celebrity, and calls for the particular attention of every Scotſman, becauſe in ſeveral reſpects it may be conſidered as the firſt of the kind undertaken by a native of this country. The author generally ſhows himſelf well acquainted with the ſubjects which are diſcuſſed, and ſeldom recommends any meaſure but ſuch as are practicable and eaſily executed. We muſt except his ſcheme for carrying embankments even into the bed of the ſea; and feel ourſelves diſpoſed to conſider him, in that caſe, as drawing bills on his imagination, which will not be ſoon retired. If he is correct, there would be no difficulty in running an embankment from the point of Gullen-neſs to the entrance of Leith harbour, and adding thouſands of acres to the national domains!

The work is dedicated to the KING. 'Two conſiderations,' ſays the author, 'emboldened me to requeſt the honour of laying the following obſervations before your MAJESTY. Your MAJESTY has long been a cheriſher aud protector of the polite and uſeful arts; and the deſigns &c. which I had the honour to make for laying out the grounds of her Royal Highneſs the DUTCHESS OF BRUNSWICK gave ſo much ſatisfaction, that after having pleaſed one ſo well qualified to judge, and ſo nearly related to your MAJESTY, I conſidered myſelf as having ſome claim to your patronage.' We obſerve that the author gives his ideas upon the ſubjects treated of in this volume, either verbally, or in the form of a report, to ſuch gentlemen as are pleaſed to employ him; and that his terms are TWO GUINEAS *per* day, with travelling and extra expences. We wiſh him ſucceſs. N.

Facts and Obſervations relative to Sheep, Wool, Ploughs, and Oxen; in which the importance of improving the ſhort-wool Breeds, by a mixture of the Merino blood, is deduced from actual practice. Together with ſome Remarks on the Advantages which have been derived from the uſe of Salt. By JOHN, LORD SOMERVILLE. London, Miller, 1803.

WE beg pardon of Lord Somerville for delaying ſo long to notice this publication, and ſhall endeavour to compenſate for paſt

omiſſions, by a more minute examination of the facts and circumſtances therein preſented, than we uſually beſtow upon works of ſimilar extent. When men of rank and fortune devote their time and talents to the inveſtigation of uſeful objects, they may at leaſt be conſidered as *endeavouring* to deſerve well of their country; and, notwithſtanding their ſchemes may prove abortive, or be imperfectly calculated to promote real and ſubſtantial improvements, ſtill they are entitled to impartial and diſpaſſionate conſideration. We premiſe theſe things, leſt any apparent ſeverity in the remarks which we are in duty bound to make on this occaſion, ſhould be conſtrued, by ſuperficial readers, as proceeding from want of reſpect to his Lordſhip.

Lord Somerville's principles on the leading branches of rural œconomy, are pretty well known to the generality of our readers; and, much as we reſpect him both in his private and public capacity, unfortunately our ſentiments have ſeldom been in uniſon with thoſe he has inculcated. He is a keen advocate for the introduction of fine-wooled ſheep, probably under the impreſſion that our great trading ſtaple, the manufacture of broad cloth, cannot otherwiſe be preſerved in a proſperous ſtate. His ideas reſpecting that important implement, the plough, are rather different from thoſe generally entertained; and as to the animals that can moſt profitably be employed in working it, he has long given a decided preference to oxen inſtead of horſes, chiefly on account of the great quantity of corn conſumed by horſes, where they are employed for executing farm labour.

In the treatiſe before us, his Lordſhip diſcuſſes each of theſe favourite topics in a deſultory and irregular manner. After an explanatory introduction, the ſubject of ſheep is entered upon; though what is communicated in this part, was originally addreſſed, in the form of a letter, to the Bath and Weſt of England Society. Some account then follows of the advantages which may be gained from the uſe of ſalt, either in ſheep huſbandry, or for the preſervation of hay. The ſecond part, on ploughs, is chiefly taken from a letter written by his Lordſhip, March 1802, to M. François de Neufchateau, ex-director of the French Republic, and member of the National Inſtitute. The third part is on the working of oxen, and concerning the cattle ſhows exhibited by his Lordſhip, for three years paſt, at Langhorn's repoſitory. The concluding pages, from 116. to the end, are of an anomalous caſt, and cannot be claſſified.

After ſtating the advantages that may be gained from croſſing the South-Down and Ryeland ſheep with thoſe of the Merino or Spaniſh breed, which, ſo far as wool is concerned, may be viewed as conſiderable, his Lordſhip (p. 7.) ſays,

'It

'It has been deemed the criterion of a good and profitable breed of ſheep to ripen early, becauſe there is room to multiply ſuch breeds, far beyond thoſe of ſlower proof. If a ſheep can come to market at two years old, his fleece will be long enough for our manufactures, and not ſold at an inferior price as ſkin wool: much before this period it would be unfit. The growth of any high proof breed of ſheep, is far greater the firſt and ſecond than the third year; therefore it may be urged, that more profit can be had from the animal at this time, than at any later period, its growth and fleece conſidered. If attempts had been made to bring into general uſe a breed of ſheep, whoſe fleeces were of value, but incapable of getting fat, we ſhould be receiving with one hand, what we were throwing away with the other; no general benefit could reſult.'

On this point we perfectly agree with his Lordſhip, being ſatisfied that no other object, except the greateſt profit, *in wool and carcaſe jointly*, from a given quantity of land, ought to have the leaſt weight with the farmer when ſelecting a breed of ſheep. Whether his Lordſhip has aſcertained the particular breed capable of yielding the greateſt profit, ſhall now be inveſtigated.

In the 9th page he aſſerts that a croſs betwixt the Bampton breed (long-wooled ſheep bred in his neighbourhood), and the new Leiceſters, decreaſed the weight of the animal not leſs than 5 lib. *per* quarter in four years, though depaſtured on land worth 55s. *per* acre, ſituated in the vale of Taunton, 'proverbially known to be one of the moſt fertile ſpots in this kingdom.' Here his Lordſhip exultingly exclaims,

'A man muſt be blind, who could withſtand ſuch evidence as this. Nature pointed out, that the ſtock was too coarſe in quality, or our climate unfit, it matters not which: the fact was plainly marked, and it was merely an act of common prudence to follow her dictates. How many thouſands, how many tens of thouſands of acres are there in Great Britain, which ſtand exactly in the ſame predicament!' p. 9.

The circumſtances above ſtated, would be of a ſingular nature, were they received in the way meant to be conveyed by his Lordſhip. It deſerves notice, that he has omitted to ſtate the original weight of the Bampton ſheep or their after weight when diminiſhed by a croſs with the Leiceſters. Probably the Bampton, like the old Teeswater breed, were of great weight, therefore the decreaſe might be no more than what would naturally follow a croſs with ſheep of ſmaller ſize. On this point, however, we are left entirely in the dark. Two queſtions however may on this occaſion be put to his Lordſhip. Was any experiment made with the *pure new Leiceſters* of the beſt kind, and did ſuch decreaſe in weight? And, can a ſingle inſtance be produced of a ſimilar effect having taken place with pure Leiceſters in other parts of the kingdom?

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His Lordſhip goes on to ſtate, that the land which carried 45 of theſe half-bred ewes, was immediately ſtocked with 150 Ryelands, though '*his neighbours ſaid they would all be ſtarved.*' This proves nothing. It is poſſible that one true bred Leiceſter ſheep might pay as much profit as three of thoſe Ryelands: we do not ſay that it would have been the caſe; but we ſee nothing in his Lordſhip's ſtatement to prove the contrary. Had his Lordſhip taken 20 of the beſt new Leiceſters, and 20 Ryelands, and weighed their food for two or three months; and if the reſult had been, that the long-woolled ſheep eat three times the quantity of the Ryelands, this would have decided the buſineſs at once, and proved more ſatisfactory than his Lordſhip's lamentation, 'that we are ſuch ſlaves to ſize, that the eye can hardly reſiſt it.'

We perfectly agree with his Lordſhip when he ſays, (p. 13.) 'Where land is deep and ſtrong enough for long-woolled ſheep, there let them be kept.' Why then not in the Vale of Taunton, which he pronounces to be 'the richeſt land in the kingdom?' But we cannot agree with his Lordſhip's aſſertion, that 'land in the Vale of Taunton might have ſupported coarſe-woolled ſheep, in ſize, had they been puſhed in firſt year's graſs, *or buried in red clover up to their eyes*, and *the refuſe mown afterwards for hay.*' On this paſſage we muſt beg leave to obſerve, that we have never ſeen a practice ſimilar to this amongſt the breeders and graziers of the improved long-woolled ſheep; on the contrary, they contrive to have their lands ſo ſtocked, as to keep their graſs ſhort; and the firſt year's clover is frequently ſtocked at the rate of from 7 to 10 ſheep per acre, even in places which have no pretenſions to vie with the richneſs and fertility of the Vale of Taunton.

From his Lordſhip's lamentations about our being ſuch ſlaves to ſize, and other expreſſions in the work, it would appear he connects great ſize and long-woolled ſheep together; which is by no means the caſe. The ewes and yearling wethers, of the improved breeds, weigh from 18 to 20 lib. per quarter, which we hope his Lordſhip will admit to be not much too large; and theſe have been found, on all proper ſoils, the moſt profitable of any other breed they have been tried with. How far they may ſtand the teſt, when put in competition with his Lordſhip's favourite fine-woolled breeds, remains yet to be decided by future experiment. The fine-woolled fleece is certainly of more value than the long-woolled. His Lordſhip ſtates the value of the half South-Down and half Spaniſh to be 12s. The value of the fleece of the long-woolled ſkeep is 6s. Here is a ſuperiority of 6s. per fleece in favour of the fine wool. But if the carcaſes be compared, we are inclined to believe, that a difference of more than 6s. will be found in favour of the long-woolled ſheep; and that the

wool

wool and careaſe of a new Leiceſter ſheep, at 15 months old, will always be found of more value than thoſe fine-woolled breeds of the ſame age, which his Lordſhip ſeems ſo anxious to ſubſtitute in their room. It is very probable, that if his Lordſhip's fine-woolled breeds were ſubſtituted every where for the long-woolled, the conſequences would be, a conſiderable decreaſe in the price of fine wool, (perhaps to the ſame level as that of long wool); and a diminution of the quantity of mutton; whereby the manufacturer and the labouring poor would have 2 lib. of fine eating mutton with high-coloured gravy, inſtead of 3 lib., which he can purchaſe, at preſent, for the ſame money as the 2 lib. would then probably coſt him.

His Lordſhip may conſider this reaſoning only as conjecture and aſſertion, without any proof from fair experimental trials. We admit that he may; but is not his whole book made up of ſimilar materials? and does it furniſh one deciſive experiment for eſtabliſhing the ſuperiority of one breed over another? We think none are furniſhed; nor have we ſeen any thing in it ſufficient to aſcertain the breed of ſheep, which will bring the moſt profit *in wool and carcaſe jointly*, from the ſame quantity of food. At the ſame time, we heartily join his Lordſhip in thinking, that 'it is not the ſize of individual ſheep, but the quantity of good meat and wool per acre, which muſt enrich the farmer, and feed the public.'

We now come to what may be called the ſecond part of this publication, wherein ample juſtice is done to the character of the celebrated Walter Blyth, who wrote on agriculture during the Protectorate of Oliver Cromwell, and who entertained ſentiments full as correct on the principles of that art, as any of our moſt enlightened modern agriculturiſts. His *Improver Improved* contains moſt judicious opinions on the leading topics of huſbandry, and concerning the implements then uſed. With the *double* plough he appears to have been well acquainted; and perhaps it was from him that Lord Sommerville procured the knowledge of an implement which many people have viewed as his own invention. His Lordſhip, when quoting a paſſage from Blyth, on the conſtruction of ploughs, adds, 'I was fortunate enough to purchaſe a copy of this book ſome weeks ago, and I have the more pleaſure in giving an extract from it, becauſe it is as ſcarce as it is valuable.' The remark is correct, both as it applies to the value and ſcarcity of the book; but we have the ſatisfaction of being able to inform his Lordſhip and others, that a new edition, with explanatory notes, is in contemplation, which, when executed, will afford every perſon an opportunity to peruſe a book, now only to be found in the libraries of the curious.

Lord Somerville explains to the *ex-director* the various ploughs uſed

uſed in this country, and diſcovers much complacency when he ſpeaks of the double furrow plough. After quoting Blyth, he goes on to add (p. 76.) 'Now, Sir, I am to prove whether or not I have marked out any of that improvement which he ſays the plough carrying two furrows is capable of.' That improvement ſeems chiefly to be confined to a moveable mould plate, the principle of which plate is 'to depoſit the furrow *at any angle required*, and to qualify it thereby for the different purpoſes of huſbandry.'

Here it may be remarked, that his Lordſhip does not ſeem to be aware, that the poſition of the ſod depends more on the proportion of the depth to the width of the ſod, than on the form of the mould-board. If his Lordſhip would try to cut a furrow as deep as it is broad, with his plough, he would find his moveable plate would not depoſit the furrow at any angle required; and that the ſurly ſod would not be ſo polite as obey the power of his Lordſhip's plate, but would ſtand on edge, and not turn at all; and if the ſod was nine inches broad by ſeven deep, he would find that it was not in the power of his plate to lay it at an angle of 40 degrees, or in any other poſition than an angle of 51 degrees.

His Lordſhip's plough being limited to furrows of only 9¾ inches wide, whenever ſuch are required to be laid in a flattened poſition, they muſt be ploughed very thin; for inſtance, if they were required to be laid at an angle of 30 degrees, the depth could not be much more than 4¾ inches.

But if it were neceſſary (as is frequently the caſe in ploughing up leas) that the land ſhould be ploughed ſix inches deep, and be laid at the ſame angle of 30 degrees, the width of the furrow muſt be 12 inches. This is not in the power of his Lordſhip's plough to execute; but how eaſily is it accompliſhed by a ſingle ſwing plough, which is confined to no dimenſions of furrow, and can be made to plough at any width or depth, at the pleaſure of the ploughman!—yet his Lordſhip aſſerts, 'I will be bold to ſay, that no ſingle furrow-plough, whether conſtructed in China, in France, or in England, has ever yet, or EVER WILL BE, able to anſwer all thoſe purpoſes, without the aid of a moveable plate.' We ſo far differ with his Lordſhip, as to think his moveable plate will not anſwer the purpoſes expected, eſpecially on ſtrong ſoils and old ſwards; and feel bold enough to ſay, that, if it has any uſe, we hope it will not be the laſt improvement that '*ever will be*' added to ſo valuable an implement as the plough.

His Lordſhip recommends his plough for having a thinneſs of breaſt, but does not point out any particular form. Mould-boards may be too thin in the breaſt, as well as too full. They ſhould be ſo conſtructed that the ſod may preſs equally upon every part, from one end to the other. But it does not appear that his Lordſhip has made any experiments for aſcertaining this point, or given

ven any reaſon why his mould-boards will paſs with leſs reſiſtance than any others.

By the figure of his Lordſhip's plough, it appears that it will not work without a wheel. This appendage is not neceſſary to the well-going of a plough, but is an incumbrance, and deſtroys a certain portion of the power of the draught: A plough conſtructed upon true principles will go perfectly well without wheels.

It is ſaid, at page 86, that there is a difference of one horſe in four, in favour of the *curved ſingle beam two-furrow plough*, when compared with the *double beam two-furrow plough*. But it does not appear that this has been demonſtrated on mathematical principles, or proved by any fair experiments; and we are pretty certain it will not be found ſo when fairly tried, by two implements equally well conſtructed; and as to any advantages being derived from the '*curved ſingle beam*,' and the bodies of the ploughs being fixed at an invariable diſtance, we are dull enough not to ſee them; but are inclined to give the preference to a double plough, where the bodies can be ſet at different diſtances, ſo as to plough furrows, of various widths and depths; and are perſuaded that his Lordſhip's plough will require four horſes, as well as the other; though it is poſſible that three horſes may be found, for a particular occaſion, as ſtrong as four common ones. But if it requires four horſes to work a two-furrow plough, we cannot ſee any advantage gained by their uſe, as the ſame men and the ſame horſes required for the two-furrow plough will work two ſingle ploughs; and we have no heſitation in aſſerting, that they are much ſimpler implements, more uſeful, on almoſt every occaſion; and that no advantages can be gained by the adoption of his Lordſhip's plough in thoſe diſtricts where the ſimple ſwing plough is in conſtant uſe, and properly underſtood.

What his Lordſhip advances on the queſtion of working oxen, ſhall now be conſidered.

In the rude ſtate in which huſbandry long remained in this iſland, oxen were generally employed by agriculturiſts, but progreſſively laid aſide almoſt in exact proportion as improvements were introduced. This is a fact, not a ſpeculation, and could not have occurred, had not the great body of agriculturiſts been convinced that, by ſubſtituting horſes for oxen, farm labour would either be more expeditiouſly executed, or performed at leſs expence. That the operations of ploughing and carting are more expeditiouſly accompliſhed with horſes, than with oxen, is an incontrovertible truth; but that theſe operations will, in all caſes, be executed at leſs expence by the former than by the latter, has been diſputed by many people. On theſe points, however, we have never entertained a doubt; becauſe, if oxen are em-

employed to perform horſe work, they muſt be fed like horſes; and as a greater number of the former than the latter muſt be employed to perform the like extent of work, the quantity of manual labour is thereby neceſſarily increaſed.

Of late, the other ſide of the queſtion has been eſpouſed by many perſons; and attempts made to reintroduce oxen as general beaſts of labour, though hitherto with little ſucceſs. Among others, Lord Sommerville has boldly ſtood forward in ſupport of the ox ſyſtem, and done much, both by precept and practice, to bring oxen into faſhion. He has eſtabliſhed a cattle ſhow at London, where two prizes of 30l. and 20l. are annually given to the owners of the beſt yokes of oxen which have laboured, during a given period, to produce corn for the uſe of man, without taſting it themſelves. We give his Lordſhip full credit for the goodneſs of his intentions, though by no means diſpoſed to think that their accompliſhment would prove conducive to the proſperity of agriculture, or even to the general welfare.

His Lordſhip's motive for offering the above mentioned premiums, is to encourage the working of oxen inſtead of horſes; being perſuaded, that ſubſtituting oxen for the draught, inſtead of horſes, would conſiderably increaſe the quantity of human food; and that both more corn and more beef would be brought to market, were this meaſure univerſally adopted. This is a ſubject upon which a great deal has been ſaid and written, and many aſſertions and conjectures have been brought forward by the advocates on both ſides. The quantity of corn conſumed by horſes, ſeems to be the great bugbear held out by their opponents, without ever once candidly conſidering the other ſide of the queſtion.

We conceive that the faireſt mode of examining this ſubject, will be to aſcertain the quantity of ground neceſſary for ſupporting a team of oxen, and a team of horſes, which will do an equal quantity of work.

The greateſt difficulty ſeems to be, in aſcertaining the number of oxen that will do the ſame work as two horſes. Some ſay that oxen, to work conſtantly the year round, ſhould not labour more than half a day at a time, or three days a week; and that, from the ſlowneſs of their motion, it will require ſix oxen to do the work of two horſes, taking into account the breaking in of the three year old ſteers. Others, on the contrary, ſay, that four oxen will do the ſame work as two horſes;—ſo, probably, truth lies betwixt the two. But, for the ſake of argument, we will take the leaſt number, namely, four, and from that endeavour to make an eſtimate.

From experiments recorded in the Northumberland Report, the food conſumed by a horſe and an ox, is in the proportion of 16 to 20, or as 4 to 5; of courſe, if it requires 4 acres to ſummer

mer two horſes, it will take 10 to ſummer four oxen. Now, ſuppoſing they conſume equal quantities of ſtraw in the winter, and allowing two acres to grow corn for the horſes, and one acre for turnips for the oxen; it will be found that the four oxen require 5 acres more for their ſupport through the year than the two horſes: And though the oxen eat no corn, they occupy 5 acres of land for their ſupport more than horſes; which five acres would have produced corn for the market, at a moderate computation, not leſs than 30 buſhels of wheat or barley, and 50 buſhels of oats,—beſides $1\frac{1}{4}$ acre of turnips, and the ſame quantity of clover. In reſpect to beef, it is a well known fact to graziers of ſhort-horned cattle, that an ox three years old, put to fatten for ſix months, is worth more to the butcher at the end of that period, and will bring more beef to market, than the ſame ox, worked three years, and then fattened ſix months, would do at $6\frac{1}{2}$ years old. Hence, if the land employed in ſupporting this working ox $3\frac{1}{2}$ years, were applied to rearing and feeding another ox, it is plain that a conſiderable greater produce in beef, tallow and leather, would be brought to market, by purſuing the ſyſtem of *breeding oxen* for *fattening*, inſtead of *working*; as the oxen would in that caſe be all brought to market at $3\frac{1}{2}$ years old, inſtead of $6\frac{1}{2}$; and, of courſe, the public ſupplied with nearly double the quantity of beef they would be, were oxen worked inſtead of horſes, and not killed till they were $6\frac{1}{2}$ years old. The natural courſe of things, in fact, ſeems to be this, that oxen ſhould be fed, as ſoon as may be, for the uſe of the table, and that horſes ſhould be employed for the labour of the field.

It may be added, that the ſuperiority of the horſe over the ox, ariſes from the great deſpatch of buſineſs, and conſequently from the ſaving of mens' wages. A horſe is alſo able to give extraordinary work, when occaſion calls for it; which is a moſt valuable quality in our unſteady climate. The ox, on the other hand, has comparatively a ſlow ſtep; and to put him beyond it, is to do injuſtice to his conſtitution. He will labour, but it muſt be ſlow; he muſt feed, and this requires time. If, therefore, much work is required, double ſets are neceſſary; which may no doubt be done, on breeding farms, without loſs; but if attempted on corn farms, would cut deep into the produce.

Thus we have given our ſentiments on the principal ſubjects treated of in this publication, though the taſk of going over it has not been an eaſy one. His Lordſhip wanders much, ſkips from one ſubject to another, and writes in ſuch a deſultory way, that we may almoſt ſay, as Sir John Falſtaff ſaid to Dame Quickly, '*One does not know where to have*' him. N. & B.

BRANCH

BRANCH III.

Agricultural Intelligence.

The winter quarter, throughout, has proved extremely favourable to the husbandman's operations; and rarely has rural labour, of every kind, been more fortunately circumstanced than at present. Wheat seed, on the fallows, clover leas, and bean stubbles, was finished before the end of November, to a greater extent than hitherto known in Britain: and, latterly, some has been sown, in the dry, early districts, on fields which carried turnips. Winter fallows for wheat and beans were executed in a satisfactory way. Clover leas and old grass lands ploughed for oats in the best manner. In short, the plough has hardly stood still for a day in the corn districts. The few frosts were of much use in allowing manure to be carted out, and in mollifying the strong soils; whilst they were neither so extensive nor severe as to injure the wheats and turnips, both of which crops continue healthy and vigorous.

In this article, last Number, it was noticed that grain markets were on the rise, and reasons were assigned for the advance which had then taken place. It is now ascertained beyond dispute, that the wheat crop of England was almost universally defective; and that in the best districts, those on which the markets depended chiefly for supplies, the deficiency was greatest. In Scotland, on the contrary, the crop, as we then stated it to be, turns out fully equal to an average one, and capable of affording important relief to our neighbours. A considerable quantity of grain, chiefly wheat, has been already sent to England, and orders for more are daily arriving.

As was formerly predicted, prices continued rapidly to get up till the middle of November, especially of wheat and barley, whilst those of oats and peas remained with little variation. The high prices in the London market, for the first mentioned grains, which less or more regulate every market in the island, caused large orders to be sent to the corn districts; and in the fulfilment of these orders, prices were offered that occasioned a greater thrashing than usually happens so early in the season. When the purchases so made arrived at market, the usual effects were produced, a temporary glut and a reduction of value, which led many people to believe that the scarcity was not so great as originally apprehended. Matters, however, are now taking a different turn. The temporary glut seems to have gone off, and prices are fast returning to the level which they formerly maintained.

Under these circumstances, it must be considered as unfortunate, that the regulations of last Session, respecting the import and export of grain, were passed into a law at that time, because, wise and salutary as they are, it was soon discovered that, by selfish and superficial thinkers,

they would be aſſigned as the ſole cauſe of the advance which gradually took place in the markets from the time of their enactment. Such people did not ſtop to inveſtigate the ſtate of the crops, or to conſider the nature of the weather which unhappily prevailed in the month of July, when the proceſſes of filling and ripening were going forward. They did not reflect that the natural tendency of the bill, we mean in the firſt inſtance, was to quicken, not to decreaſe importation; becauſe, after the 15th November, the rates, at which importations could be made, conſiderably advanced. Nor did they take into account, that exportation could not take place, conſequently no bounty could be drawn, when the average prices ſo much exceeded thoſe at which the one could be executed, and the other obtained. To a reaſonable and diſpaſſionate man, the bill of laſt Seſſion, whatever opinion may be entertained of its real object or merits, muſt appear in no other light than as a dead letter, ſo far as its operation was connected with the late and preſent high prices. That it is calculated to raiſe prices to a certain extent, we readily grant; becauſe, if meant for the relief of the grower, it would otherwiſe have been uſeleſs; but the rates, fixed on therein, for regulating import and export, were exceeded by the averages of ſeveral diſtricts before the time fixed for its operation; nay more, prices have declined ſince the 15th November, when the bill was to have the force of a law; conſequently, all that has been urged againſt it on that ſcore is extraneous and irrelevant.

We have liſtened with attention to the *hue* and *cry* lately raiſed, and to the arguments adduced, in the manufacturing diſtricts, againſt the bill, and in favour of its repeal, and muſt confeſs that we regard the moſt of them as undeſerving of notice, and altogether formed on the true mercantile ſpirit, which, happily for the country, does not now maintain its former influence. From many others before us, we ſelect the reſolutions of the Lord Provoſt, Magiſtrates and Common-Council of Glaſgow, as entitled to ſome notice, not only becauſe of the ſuperior reſpect due to that body in their corporate capacity, but alſo becauſe, as might be expected, their reſolutions are expreſſed in more temperate language than what has been uſed by other public bodies, thoſe of the Chamber of Commerce excepted. The city of Glaſgow, in the reſolutions, declare their intention of petitioning Parliament, 1. To reduce the prices at which grain is allowed to be imported from foreign countries on payment of the low duties: 2. To regulate theſe prices according to the average of the whole maritime diſtricts of Great Britain: 3. To allow the free tranſmiſſion of every kind of grain, at all times, from any one port in the kingdom to another: 4. To enact that, when importation from the Britiſh colonies in America is permitted, the ports ſhall continue open for ſix months at a time.

To the ſecond and third objects of the petition we are not hoſtile, our ſentiments, as often declared, being friendly to a free trade in grain within the iſland; and we can ſee no difference whether this trade is carried on internally with a waggon, or coaſtwiſe with a ſhip. The firſt object we decidedly oppoſe, becauſe it goes virtually to a repeal of the

the act of laſt Seſſion, though ſuch was paſſed upon wiſe and cogent motives. To the laſt we can by no means agree, becauſe a meaſure of this nature would nearly be the ſame as permitting a free trade in grain with the Britiſh colonies in America at all times.

The reaſons, on which the firſt prayer of the petition is founded, do not diſplay ſuch accuracy in buſineſs as might have been expected from the reſpectable petitioners. My Lord Provoſt, &c. in their ground-work, ſay, in ſubſtance, that the average price of grain, for the whole of Scotland, from May 1793 to Auguſt 1804, has been examined, and that it is found that, at the rates fixed by the recent ſtatute, the ports, during the above period, would have been *almoſt* uniformly ſhut, with the exception of the years of ſcarcity. Now, granting the correctneſs of this ſtatement, but denying the inference meant to be drawn from it, we preſume that a reference to paſt times proves nothing, when directed againſt the late act, except this one thing, namely, that if Britain does not produce a ſufficient quantity of grain for the conſumption of its inhabitants, a riſe on the home price, to a certain extent, muſt take place before recourſe can be had to foreign countries, or other places, without the Iſland, for additional ſupplies. Allowing, for argument's ſake, that an annual deficiency takes place, this deficiency would be regularly ſupplied by imports as formerly, though confeſſedly on higher terms. If my Lord Provoſt and his brethren meant to inſinuate that, under the preſent bill, the ports would never be open for importation, *except in times of ſcarcity which approached to famine*, they either impoſed on themſelves, or intended to impoſe upon others; and yet, in the argument adopted by them, what elſe could be their meaning?

The ſecond reaſon is directly in the face of an eſtabliſhed fact, namely, that labour has riſen more in value than proviſions. My Lord Provoſt, &c. declare 'that the prices, at which, according to the late act, the different kinds of grain, eſpecially oats and oat meal, may be imported on payment of the low duties, are much higher than the exiſting circumſtances require.' Now, what are we, in this caſe, to underſtand by *exiſting circumſtances?* Do theſe gentlemen mean the circumſtances under which the *grower* is placed, that is to ſay, the rate of his rent, the value of his labour, and the extent of his taxes? or, is it the circumſtances which affect the *conſumer*, and, among others, his relative ability to purchaſe bread and meal at a trifling advance of price, that we are called to conſider? If the *firſt* are meant, we preſume that a ſingle argument, in favour of the proviſions of the late ſtatute, muſt be regarded as ſuperfluous, becauſe the expences of cultivating land are univerſally acknowledged to have, of late, conſiderably increaſed. If the *ſecond*, we muſt regard the general rate of wages as much more advanced than what is required, to meet any alteration of the prices of grain which can poſſibly take place under the operations of the new corn law. We are ſatisfied concerning the iſſue, if the merits of that law are to be determined by an appeal to *exiſting circumſtances*. In fact, the value of money is ſo materially altered, as to juſtify us in maintaining, that the rates fixed

by the bill, though *nominally* higher, are in *reality* lower than thoſe fixed on in any former bill, ſince corn laws were judged expedient and neceſſary.

If any thing on this ſubject, from a manufacturing or mercantile body, could give us ſurpriſe, it would be what is ſaid concerning oats and oat meal; becauſe the rates, at which theſe neceſſary articles may be imported, are in reality lower, comparatively ſpeaking, than thoſe which affect other grains. Oats may be imported at the low duty of 2d. *per* quarter, even from foreign countries, when the average price is 22s. *per* quarter, or about 16s. *per* Linlithgow boll, which no perſon can regard as an extravagant price, as meal can then be afforded at 13d. *per* peck. It alſo deſerves notice, that for twelve months paſt, meal has ſeldom been higher in the Glaſgow market than in that of Edinburgh, and, at the preſent moment, does not exceed 1s. 4d. *per* peck, or 2d. *per* pound weight. If any thing was wanting to prove that markets are regulated more by the productiveneſs of the crop than by corn laws, it might be got from the preſent prices of oats and oat meal. Oats, laſt ſeaſon, proved to be an average crop; conſequently, prices have kept moderate, and have not advanced much above the importation rates. Wheat, on the contrary, was very deficient in many diſtricts; conſequently, advanced with rapidity above the prices at which it could be imported. If this advance was occaſioned by the late act, why was not the price of oats affected in the ſame manner? No other anſwer can be given, than that oats were a good crop, and wheat a bad one. The law for regulating the *import* and *export* of both, paſſed at one and the ſame time; yet we find that it has had no effect in *regulating* the market prices of either, except ſo far as aroſe from prohibiting import below certain rates therein fixed.

If my Lord Provoſt and his brethren meant to make ſuch an impreſſion upon the Legiſlature as would have produced a repeal of the act of laſt ſeſſion, they ought to have taken up a different ground, and ſhewn that the prices, *fixed* for regulating import, had been raiſed more than was called for by *the increaſed expence of farm labour and public burdens.* This would have been a ſound foundation on which their after reaſons might have been built; and could they alſo have ſhewn, in a ſatisfactory manner, that the rate of wages, paid by them to the operative manufacturers, was not in uniſon with the advance of price which, to a certain extent, will take place in the grain market in conſequence of the new law, they might have expected ſucceſs from their petition. If a free trade in grain was wiſhed for, they ſhould have begun by diſclaiming and renouncing all monopoly. This line of conduct, to be ſure, would have been contrary to the mercantile principle, though certainly agreeable to the one which directs us to do to our neighbours what we would wiſh done to ourſelves.

That a ſtrong puſh will be made in Parliament to repeal or amend the corn law, need not be doubted; and it is a duty incumbent on the landed intereſt to meet their adverſaries with firmneſs and reſolution. If they ſit with their arms *a-kimbo*; if they ſuffer the table of parliament

ment to be crowded with petitions from manufacturing diſtricts, without claiming to be heard in defence of their own intereſt, then defeat and diſgrace muſt inevitably follow. Agriculture has often, and with juſtice, been denominated the firſt of the arts, whilſt thoſe employed in it may be ſafely conſidered as the moſt numerous and moſt uſeful claſs of manufacturers. Every wiſe government will therefore protect their intereſt with diligence and aſſiduity. Such will not offer a boon to foreign agriculturiſts, or give them a *ſtance* in the home market on preferable terms, merely to gratify the humour of other traders and manufacturers. In fact, the Glaſgow merchants would rather import wheat at all times from America, than from the eaſtern coaſt of Britain, and that for a reaſon which, with them, is the beſt of all reaſons, that greater profit is thereby gained. For

'Give but a merchant preſent profit,
'He takes, and thinks no further of it.'

Such do not care an old ſong about the improvement of the country, or the ſucceſs of its huſbandry. Theſe things they leave to

'Your lords, your worſhips, and your honours.'

We may remember the activity diſplayed by the Weſt Indian merchants to keep the diſtilleries ſhut, which would likely have ſucceeded, had they not been withſtood by the guardian angel of agriculture under the ſemblance of Mr Addington. It is to be hoped that his Successor will not be leſs attentive to the beſt and trueſt intereſt of the country, nor countenance a meaſure, that has for its object the ruin of Britiſh agriculture; a circumſtance which would neceſſarily attend the introduction of foreign grain into our markets, on lower terms than thoſe at which it can be ſucceſsfully cultivated by huſbandmen at home.

It has been confidently reported, of late, that the property tax is to be doubled; a meaſure to which, if called for by ſtate neceſſity, we can have no objection, providing the tax, ſo far as it affects the occupiers of land, is impoſed upon them in the ſame way, and to the ſame extent, as on other claſſes of the community. If the principles, adopted in the act 1803, whereby rent was made the criterion of income, are meant to be continued, we muſt offer our ſolemn diſſent from the meaſure; becauſe ſuch are oppreſſive, unequal, and calculated to raiſe double more money from farmers, than from other claſſes who enjoy equal incomes. The evil is great, under the exiſting law; but, if the tax were to be doubled, the evil would be increaſed, not in an arithmetical, but in a geometrical progreſſion. A tax of a tenth *may* be paid; but one which would go to a half, or even to a fourth, would infallibly bring ruin and deſtruction on numberleſs individuals.

As the five per cent. tax is, at all events, to be collected for another year, viz. for 1804, according to the preſent regulations, we are in duty bound to offer a few remarks on the way and manner in which it was aſſeſſed and collected for 1803: This we ſhall do with as much brevity as is conſiſtent with the importance of the ſubject under conſideration.

The

The chief points on which different opinions were held in Scotland, concerning the Property act, were the clauſes which applied to farmers poſſeſſing under leaſes whereof ſeven years had elapſed, and the deduction of one eighth from the rent of tithe-free farms. On the firſt point, we believe few counties had much reaſon to be diſſatisfied, becauſe valuations were generally made on liberal and equitable principles, that is, according to *the worth of the land at the time*, all the circumſtances, under which the occupier was placed, being conſidered; but, on the other point, namely, the deduction of one eighth from rent, a greater difference of opinion prevailed; and in very few counties, perhaps in not more than four or five, was this deduction obtained, though more plainly and diſtinctly expreſſed than almoſt any other part of this multifarious and complicated act. In fact, the people who diſputed the deduction, argued rather againſt its expediency and propriety, than againſt the validity of the enactment. They ſeemed to aſſume the right of *ſitting in judgement* on an act of Parliament, inſtead of confining themſelves to the duties attendant upon its execution. If the deduction had been refuſed in our caſe, we would have ſuffered a diſtrain, and brought an action of replevy. The words of the act, applicable to the deduction, are ſo poſitive, that the conteſt would have been an eaſy one. The propriety and expediency of the deduction may be conteſted, but not the enactment itſelf, which expreſsly, and without any limitation whatever, applies in the like manner to farmers in both countries.

One thing occurred in the collection of this tax, at leaſt it happened in the county we are connected with, which proves how little the ſubject is underſtood even by thoſe appointed to execute the act. The ſmall tenants, indeed every one, whatever rent was paid, were aſſeſſed in the full ſum of ſixpence per pound of rent, after the deduction of *one eighth* therefrom was made; though, to any perſon poſſeſſed of a tolerably clear head, it muſt be obvious that one half of the rent was to be taken as income, and abatements made accordingly. In fact, every tenant paying leſs than 137l. ought to have been exempted from the tax, becauſe, according to the act, it requires ſuch a rent to yield 60l. of income; and none were liable to the *maximum* tax of 6d. in the pound, who paid leſs than 342l. 10s., except they had income from other ſources. We ſtate theſe particulars, in order that the tenantry may be on their guard againſt erroneous charges in future; and recommend that abatements ſhould be claimed, in the returns made to the commiſſioners, by every one who is placed under the circumſtances condeſcended upon.

We underſtand that it is in contemplation to eſtabliſh a branch of the Morayſhire Society, for the benefit of the widows and orphans of farmers, in the diſtricts ſouth of the Forth. This is a wiſe and ſalutary meaſure, and deſerving of ſupport. We mean, in next Number, to point out the objects of the Society in a minute manner. In the mean time, ſome particulars reſpecting the eſtabliſhment may be learned, on applying to Meſſrs Murray Baxter & Maſon, inſurance-brokers, Edinburgh.

Sir

Sir George Steuart Mackenzie of Coul, Baronet, with a view to benefit agriculture in an important branch, authoriſes us to offer, in his name, a *gold medal* of *five guineas* value to the author of the beſt eſſay on the ſtoring of turnips and ruta baga for the ſupply of winter and ſpring conſumption. Competitors for this premium will be ſo good as lodge their eſſays, on or before the 10th of June, with the Publiſhers of this Work, affixing a motto to them, and encloſing a ſealed note containing their names and addreſs, with a copy of the motto on the outſide, none of which ſhall be opened, except the one that relates to the eſſay for which the medal ſhall be adjudged. The prize eſſay ſhall be inſerted in the Auguſt Magazine. Sir George, with a partiality which calls for every acknowledgement, has been pleaſed to conſtitute the CONDUCTOR ſole judge for determining the merits of the ſeveral competitors.

The weather has been hitherto exceedingly favourable for feeding cattle and ſheep on turnips; and it has been remarked, that in few ſeaſons this valuable root has afforded ſo full a ſupply of food as in the preſent one. Fields, under this crop, proſpered amazingly in autumn; and it may ſafely be ſaid, that, in every caſe, they have turned out ſuperior to expectation: So has ruta baga. Fat cattle and ſheep continue pretty plentiful, and draw prices from 8s. 6d. to 9s. per ſtone Amſterdam, ſinking offal. Lean ſtock of all kinds, from the goodneſs of the weather, is in a thriving way, and, according to every account ſent us from the breeding diſtricts, will be preſented in good order when the graſs ſeaſon arrives, providing no unfortunate circumſtances intervene. *Jan.* 30. 1805.

EXTRACTS FROM PRIVATE CORRESPONDENCE.

SCOTLAND.

Letter from a Gentleman in Roſsſhire, Jan. 14.

'WE have enjoyed uncommonly fine weather, interrupted indeed occaſionally by froſt, which will prove beneficial to the ploughed land. A conſiderable part of our ſpare grain was early bought up at high prices, in conſequence of the great demand from the ſouth, which, however, has recently ſlackened. Owing to the unfavourable weather at wheat ſeed time, the fields ſown with that grain do not look ſo well as we could wiſh, though of late their appearance is much improved. Potatoes were a more abundant crop than for many years paſt, which is a fortunate circumſtance during the preſent high price of meal. Indeed this eſculent is ſo highly reliſhed by our people, that it forms their principal food. Turnips are alſo a good crop; and, added to the full ſupply of ſtraw this ſeaſon, will cauſe our cattle come to market, next

ſpring, in higher condition than cuſtomarily happens. The practice of giving turnips to wintering cattle in the ſtraw-yard was introduced by ſome ſouth-country farmers, and it is to be wiſhed that it were more generally adopted. A very extraordinary oppoſition has been ſtarted in this county againſt the propoſed improvements by bridges and roads; but, from the activity of ſeveral proprietors, hopes are entertained that it will be completely overcome.'

Banffſhire Quarterly Report.

Our operations have gone on with very little interruption ſince the date of laſt Report, and, in general, labour is well advanced. A briſk demand for grain prevailed about the end of November, and better prices were given than this county has been accuſtomed to receive for ſome time paſt, particularly for wheat and barley. The former is moſtly ſold, and brought from 35s. to 38s. per boll of 88 pints, and barley 25s. and 26s. per boll of 128 pints. It is now obvious that this article makes but a ſmall part of the crop, and what remains on hand is expected to bring a good price, notwithſtanding of the depreſſion which lately took place. Oats, which may be conſidered the principal part of our crop, have been bought in conſiderable quantities at 17s. and 18s., and ſeveral cargoes are already ſhipped. They are, however, fallen to 15s. and 16s., with little demand. What I hinted in my laſt is now fully verified; the crop turns out an abundant one, the oats doing remarkably well both in the barn and the mill. Potato oats yield rather better than 18 pecks from the boll, and a kind we lately got from Angusſhire gives 17 pecks. Although thraſhing did not commence early, on account of the fine autumn, the quantity of grain already ſold greatly exceeds that of ordinary ſeaſons. Feeding of cattle is like to be a bare trade with us, butcher meat being ſcarcely worth 7s. per ſtone, ſink offal: So that if a riſe does not take place in the ſpring, it is to be apprehended that a great part of our turnip will be conſumed with little advantage.——*Jan.* 17.

Letter from Upper Annandale, 17th January.

'The falſe alarms raiſed about the corn bill had an effect in raiſing the prices in October, which fluctuated from 2s. 6d. to 2s. 4d. per ſtone for oat meal, and from 5s. 4d. to 5s. per Wincheſter buſhel of firſt barley, but are now ſubſided to 2s. 3d. for oat meal, and under 5s. for firſt barley. The late unfavourable weather for ploughing has filled the corn mills to the doors, and contributed alſo to reduce the prices. Moſt part of the barley of this quarter has been diſpoſed of. There was little extra thraſhing in November, people on both ſides appearing diſpoſed to wait the iſſue of things, which at that time was uncertain. A conſiderable breadth of ploughing was accompliſhed before the late froſts commenced; and large quantities of manure were taken out during thoſe froſts, and depoſited in the fields intended for fallowing by green crops.

'Lord

'Lord Meadowbank's compoſt (moſs and dung) produced me excellent turnips laſt crop, of all varieties, including Swediſh; and potatoes of better quality than thoſe grown on ſtable dung, and, what I was not prepared to expect, in larger quantities alſo.'

Dumfrieſſhire Quarterly Report.

THERE has ſeldom been a winter quarter more favourable than the preſent for farming purſuits. Little ſnow has fallen—the froſts have been moderate—the thaws gentle and temperate. The conſequences are, that cattle and ſheep are healthy, and in great ſtrength. Turnips have ſtood quite ſound, and ſeem to feed as truly as ever occurred in any ſeaſon.

Plough-work has gone on ſucceſsfully. The early ſown wheat vegetated briſkly, and is luxuriant. What was late ſown, upon potato land, remained long under ground, and ſome is not yet up. Much dung has lately been moved out of the ſtraw-yards; and it is ſatisfactory to ſee that farmers are generally adopting that beneficial practice which leſſens their ſpring labour, at the ſame time that it increaſes the value of the article.

Cattle ſold rather more freely at the end of autumn than expected, though the dealers had to travel farther ſouth than uſual. It is underſtood, however, that they were well paid for their journey. From this circumſtance, it is thought that ſtrong cattle will be in demand, and go off early in the ſpring. The demand for fat ſheep did not leſſen after Martinmas; but the great number of them in the country prevented their bringing laſt year's prices. By the repetition of good ſeaſons, they have increaſed beyond expectation; and the preſent moderate price of animal food is wholly owing to an overſtock. Indeed, the country never was more favourably circumſtanced for the conſumption of butcher meat. Tradeſmen are paid high wages—manufacturers are in full employment—and thouſands of *idlers*, who would have been half ſtarving at home, now fully fed on beef and pork in our navy and army. But the price of meat need not be expected to riſe much, unleſs we are viſited with cold and wet ſeaſons, which neceſſarily prove injurious to ſheep flocks.

Wheat of laſt year's growth is generally ſmall in the pickle, and of light weight, and has ſold at about 9s. per buſhel. Barley was good, and brings 5s. Oats, the potato kind, 3s. 4d. Common kinds, 2s. 9d. Oatmeal, 2s. 4d. per ſtone.——*Jan.* 21.

Letter from an extenſive Farmer in Annandale, January 21.

'Our markets for all ſorts of grain were briſk in November, the demand from Liverpool and other ports in that quarter being conſiderable; but, of late, prices have experienced a reduction of from 12l. to 15l. per cent., with a proportional diminution of orders. Barley was not an abundant crop with us, nor was wheat good, much of it being blighted and ſmutted; but oats are plentiful. At Carliſle market on the 19th, wheat ſold at 30s., barley 14s., potato oats 9s. 6d., common

mon ditto 7s. 6d. to 8s., all per Carliſle buſhel, equal to three Wincheſters. I think there is not much more grain thraſhed out than uſual at this ſeaſon of the year, it not being the cuſtom of our farmers to thraſh faſter than cattle foddering requires.

'The number of ſwine in hand this ſeaſon is uncommonly great, and the price of pork fallen to 5s. or 5s. 3d. per ſtone of 14 lib. At our Dumfries market, from 200 to 250 head, weighing from 14 to 20 ſtone each, are ſold weekly, beſides many drove directly out of the county. Our chief demand is for the London market, where they are ſent in a dried ſtate; but Liverpool and Whitehaven likewiſe take a good deal off our hand. Sheep have not lately ſold well, though it is expected that the price of fat will ſoon move upwards. Our drovers brought their ſtore cattle to a good account this ſeaſon. At St Faith's fair in Norfolk, an uncommon number of Galloway and Fife cattle were ſhown, which, from the accounts I have obtained, paid the drovers handſomely. The Leiceſter ſheep ſeem to anſwer well with me, having had more demands for ſmall parcels of them than I could ſupply. I think that breed will ſoon become a common ſtock with us, much to the benefit of the land, and advantage of the owners.

'Potatoes are an abundant crop this ſeaſon, and a great many cargoes have been ſhipped for Liverpool and the neighbourhood at 18d. per 112 lib. The quantity on hand ſtill greatly exceeds what will be wanted for the ſupply of the diſtrict.'

Letter from Falkirk, January 22.

'The circumſtances of laſt quarter, like the barren period of the year it includes, afford little matter for an agricultural report. The ſeaſon, upon the whole, has been very open, and extremely favourable to field operations, conſequently ploughing is as far advanced as could be wiſhed in preparing for the enſuing crop. The ſame circumſtances have been favourable for keeping cattle long out of the ſtraw yards; but indeed fodder is in ſuch abundance, that this has been of much leſs conſequence than often happens. Although ſtraw has not been much wanted, the ready demand in the market for all ſorts of grain has cauſed thraſhing out to be as far advanced as uſually happens at this time of the ſeaſon. The wheats look admirably well, eſpecially ſuch as were early ſown. They have acquired a degree of vigour that will enable them to hold out againſt ſevere trials in ſpring, ſhould ſuch occur. Thoſe ſown later are a great deal more feeble; but of this deſcription few fields occur in our diſtrict. Nine tenths of our wheat being after ſummer fallow, we need ſeldom be thrown late in ſowing; and early ſowing is now generally admitted to be of great importance.

'Young graſſes continue to look very promiſing. It is rather ſurpriſing that the heavy crop on the ground laſt year did not prove more prejudicial to them. Some paſture fields have been already let at a rate greatly beyond that of laſt year; but, from preſent appearances, many very judicious people are much at a loſs to conceive how they can poſſibly make it out under ſuch an advance of rent. Our butcher market

has

has been very fully ſupplied, and prices have continued pretty ſteady; any variation, however, being rather on the ſide of declenſion. Our grain market, at leaſt in the article of wheat and barley, during the laſt quarter, had riſen conſiderably, but for ſome months paſt has been gradually declining again. This has taken place in a greater degree with reſpect to barley, and ſhews unequivocally, that the demand for this article has upon the whole leſſened, as it is perfectly aſcertained that the quantity ſown laſt year was much below what had taken place for ſome years before. The diſtillers having lately uſed a great quantity of oats in their manufacture, may perhaps account for the fall in barley. Wheat may be noted at 40s., barley 28s., beans 21s.; potatoes 6s. 6d. per boll; oat meal 15d. per peck.

'Allow me to make a remark on the ſtate of our corn market, to which I am led, by obſerving, in a late newſpaper, ſome reſolutions of the merchants and manufacturers of Glaſgow, againſt the corn-bill, particularly ſetting forth the partial hardſhips thoſe manufacturing diſtricts, with which they are connected, muſt ſuffer above others in the kingdom, from its operation. I am not now ſpeaking of the general merit, or demerit of the bill, but merely whether its regulations have partially affected the weſtern or manufacturing diſtricts of the country in a greater degree than others of the kingdom, on which a great part of the complaint is reſted. From the language held, we would naturally expect to find, that the corn-market of Glaſgow, and thoſe much connected with it, would be higher than thoſe of the eaſtern, or agricultural counties of the kingdom. This at leaſt ſeems a natural inference, and, if it were the fact, would certainly go farther than many arguments in eſtabliſhing the truth of the peculiar hardſhips of that bill in its application to them. The market at Falkirk, ſituated in a rich corn country, is well known to be one of the moſt conſiderable in Scotland, and peculiarly connected with that of Glaſgow by means of the canal, which affords an eaſy, expeditious, and cheap communication with that city, and muſt neceſſarily feel any conſiderable variation in the price of corn there. In the Falkirk market, the price of wheat (in which article the principal advance has taken place) has not only fluctuated much leſs, but has been uniformly below that of Haddington, in a degree much greater than ever before was known. Conſidering our ready communication by the canal, how could this have happened, were it true, as ſtated, that the weſtern diſtricts had felt in a peculiar or partial way the influence of the corn-bill? If this bill has had any conſiderable effect at all, which I believe few people who know much of theſe matters think it has, it certainly does not appear in any thing like a local or partial riſe in the weſtern markets.

'But it is well known how ſenſibly alive theſe gentlemen are to every thing that might tend in any degree to trench on their exorbitant and extravagant profits, which their ſplendid manner of living emphatically proclaims to the world. They are ſufficiently well acquainted

quainted with their own buſineſs to know, that any riſe in the rate of labour (and this is what they dread) may be attended with a diminution of their profits. This is the true ſecret of all their meetings, which are in the true monopolizing ſpirit that has ever characteriſed that claſs of the community.'

Letter from a Gentleman near Perth, January 23.

'With us, the grain crop 1804 turns out ſomething like an average; and it ſeems more than probable that the recent high prices were ſolely occaſioned by a failure of crop in the ſouthern diſtricts of the Iſland. Owing to the uncommon demand at an early ſtage, and with prices above par, a quantity of grain, greater than common, could not fail to be drawn from the growers. In fact, a proportion exceeding ordinary ſales has already been marketed; and many ſtack-yards at Martinmas had aſſumed their uſual Candlemas appearance.

'The regulations of laſt Seſſion reſpecting the import and export of grain, have been aſſigned as the cauſe of the late high prices; and ſtrings of reſolutions have iſſued from the *Perth Shoemakers' Hall*, and other places, *demonſtrating* the neceſſity of amending the corn laws. Without troubling you with obſervations on the proceedings of theſe wiſe men, becauſe ſuch are directed againſt a meaſure, which, ſo far as connected with export has not operated, nor probably will not ſoon operate; I would entreat that a fair, well-trimmed *thraſhing machine* be ſent to the foreſaid hall, ſo as the members may be enabled to explain and amend the corn laws in a ſatisfactory manner. I am free to ſay, that neither horſe power, nor water motion, will be needed in working ſuch a machine; for the blaſts of oratory alone will be a ſufficient impelling power to give every requiſite velocity.

'That an alteration was neceſſary of the rates at which importation could be made at the low duties, will hardly be diſputed by any perſon of reflection, or who poſſeſſes the ſmalleſt ſhare of candour and information. Had foreign grain been receivable on the old terms, and prices remained in the home market like thoſe which formerly prevailed when the country was differently circumſtanced, how could the increaſed value of labour and the additional taxes have been paid by farmers? It is conſiſtent with my knowledge, that many needed a reward from crop 1804, to make up the loſſes ſuſtained from the two preceding ones, when corn was, in many inſtances, ſold below prime coſt.

'The weather, during the quarter, has been variable, but, on the whole, very favourable to the *out-door* operations of huſbandry. Stock have been regularly well ſupplied with good turnips; and it was a lucky circumſtance that this uſeful root improved ſo much in the autumn months; for otherways, from the general inferior quality of our ſtraw, the cattle ſtock would have been in a low condition when the ſpring ſeaſon arrived.'

Moraysſhire

Morayſhire Quarterly Report.

We have in this county met with little interruption from the weather to our field labour, which is very forward. The uſual quantity of wheat is ſown, and looking well.

'The quality of our grain is remarkably good, the quantity abundant. Wheat continues, with ready ſale, at 35s.; Barley pretty current, at 22s. 6d. to 25s. *per* boll; and Oats, at 18s. to 20s. *per* five firlots.

'Many circumſtances combined to prevent our farmers from availing themſelves of an accidental ſtart in prices at this early ſeaſon. Bad harbours, a remote ſituation, the great uncertainty of making a paſſage, and our coaſting veſſels laid up during the winter,—theſe are a few of the cauſes; to which may be added, the parcelling out of land into ſmall farms, and the want of encloſures obliging us to keep an extra number of work cattle, conſequently to huſband our fodder, and thraſh only as it is wanted for their ſuſtenance; while the dry ſoil of this county is often unproductive in this reſpect. I ſaw more ſtraw, laſt Auguſt, in *one* Eaſt-Lothian farm yard, than could have been at that period collected in all this county. This ſeaſon, it is, however very different: we have great abundance. The ſtack-yards hold out remarkably well; and we can ſpare an unuſual quantity of very fine grain.

Turnips are alſo good; and dealers will, in the ſpring, find ſome excellent parcels of well wintered ſtots, in high condition for graſs. To this deſcription of ſtock our farmers now give the greater part of their turnip crops, the demand for ſtall-fed cattle being very inſignificant and uncertain. It is of importance to mention, that dealers have now a very great facility in carrying cattle out of this county, in conſequence of the bridge over Spey being completed. Beef and Mutton, in our market, ſell at 6d. *per* lib. Hay is plenty at 8d. *per* ſtone of 20 lib. Amſterdam.—*Jan.* 23.

Aberdeenſhire Quarterly Report.

The weather, for three months paſt, has been uncommonly open for the ſeaſon, and little interruption given to field work. Turnips have been got from the fields with eaſe and facility. Even in the inland ſituations, feeding of cattle has been more a pleaſure than a drudgery, little ſtoring up of this root being practiſed in the county. The market for cattle has kept very ſteady; and the ſtock on hand is rather full than otherwiſe. The crop, under the flails, turns out very productive, and of very fine quality. About the end of November, prices for grain got up ſuddenly, till bear came to 25s. and 26s. per boll, and oats from 18s. to 21s.; but theſe prices were not ſupported above two weeks. They wore down till bear came to 22s. and 24s. per boll, and oats from 16s. to 18s.; at which, or thereby, they have continued ever ſince. There has been no backwardneſs amongſt the farmers to ſell at the prices offered, although no inducement of a high price will prevail on almoſt

any

any of them to thraſh out, at this ſeaſon, one boll above their daily demand. The reaſon is, that a great value is laid on the ſtraw, ſtock being the firſt object with the farmer in this county. To find graſs for a full ſupply of cattle in ſummer, and provender, that is, hay, turnip and fodder for them in winter, may be ſaid to be the *primum mobile* of all the operations throughout the year. To attain this, the land, whether good or bad, receives a ſummer-dreſſing either for turnip or fallow. It is dunged or limed—generally both. With the firſt crop thereafter, which is either bear or oats, graſs ſeeds are ſown. We underſtand nothing about the four-courſe ſhift, or five-courſe either, ſo ſucceſsfully practiſed, by many, in more favourable ſituations. Very little of our ſoil would bear ſuch management; but, when laid down to graſs in decent order, we know that it will ſupport more cattle, feed them well, and continue good paſture five or ſix years, or longer, if it can be ſpared. After this, it is broke up for oats, two crops of which, on ordinary ſoils, make another dreſſing neceſſary. Sometimes, on the beſt land, three crops are taken; that is, one of oats, one of bear, and a third of oats. This ſyſtem of management, to thoſe who are accuſtomed to white and green crops alternately, will no doubt appear very unaccountable, and bad huſbandry. But if it is taken into account, that the ſoil is not capable of producing beans, that even peas are a crop which are ſometimes loſt altogether, although often ſubſtituted in the place of ſummer fallow, it may not appear ſo ſurpriſing that graſs ſhould be ſubſtituted in place of alternate white and green crops, and that a greater degree of reſt ſhould be given to the land. From the number of cattle kept, ſummer and winter, under this management, moſtly reared, partly fattened, the farmer looks more for his ſupport, or profit rather, than from grain, the cultivation of which injures the ſoil, and brings on a heavy additional expence. Owing to the above ſyſtem of management, which, with ſome little variation, is applicable to the counties of Aberdeen and Banff, it will appear that much grain cannot go early to market from theſe diſtricts; and though, on the whole, we will have a conſiderable quantity to ſpare, yet little has as yet been exported.—*Jan.* 23.

Letter from Galloway, January 25.

'THE demand for grain, this year, in Galloway, has been great. Oats, weighing 36 lib. per buſhel, have ſold at 30s. and 31s.; potato oats, weighing 42 and 43 lib., at 40s.; and bear from 50s. to 60s.; all per Galloway boll of 12 buſhels. Of late a conſiderable fall has taken place, and prices are now from 4s. to 5s. per boll reduced. Wheat lately brought 9s. and 10s. per buſhel; but little of this grain, or of beans, is cultivated in this diſtrict.

'At the cloſe of our cattle markets, the demand for *winterers* was pretty good, although at reduced prices. There are not many fat cattle here, the demand for ſuch not being great. At Stranraer, beef is ſelling

ling at from 4½d. to 5½d. per lib. avoirdupois; Mutton about a halfpenny cheaper.

'The weather has been very favourable this winter, and farm labour is far advanced. We had ſome froſt in December, but no ſnow till the 22d current, when a pretty heavy fall took place. The froſt, for two days paſt, has alſo been ſevere. As the uſual rains have been miſſed this ſeaſon, the feeding of cattle with turnips in the field has been attended with more advantage than ordinarily happens.'

Extract of a Letter from the Diſtrict of Carrick, 25th January.

'With the exception of a few weeks, or rather days, the weather, during this quarter, has been favourable for the purpoſes of agriculture. Their have been ſeveral weeks of mild froſt, which greatly benefited the fallows, while it was not ſo violent as to injure the new ſown wheat; and it is, of all others, that ſort of weather which, at this ſeaſon of the year, is moſt deſirable to the graziers, of whom there is a conſiderable proportion in this part of Ayrſhire. The effects of the diverſity of laſt ſummer and harveſt cannot yet be fully aſcertained; though, if we were to judge from the early and ſudden riſe in the price of grain, immediately after the concluſion of harveſt, and before the corn bill had time to operate, we muſt conclude that the laſt crop is not conſidered as being very abundant. Bear and barley roſe to 2l. 2s. and 2l. 10s. per quarter; Wheat from 9s. to 10s. the Wincheſter buſhel. Oat-meal has continued ſtationary during the winter, in the market of Ayr, at 16d. the peck. The prices of lean, or wintering cattle, advanced a little, about Martinmas; but the graziers complain that the price of fat cattle is not in proportion to what they are ſold at in the ſhambles. It would appear, from the prices quoted in the newſpapers, that butcher-meat is as high to the conſumer as when the grazier was receiving near 25 per cent. more than at preſent.

'It would be a deſireable thing, to many of your readers, if your reporters would ſpecify, more accurately than they generally do, what meaſure and weight they mean, when they mention the price or quantity of either crop or meat. It is well known that what is called a *boll* differs almoſt in every different county in Scotland; and it is the ſame thing with regard to weights. In ſome places, the pound is 16 oz.; in others 17½; in others 22¼; in others 24 oz. When it is ſaid that grain is ſo much the boll, and meat is ſo much the pound, how is a plain farmer to know what the real price is, unleſs the relative weights and meaſures are ſpecified?—The Wincheſter buſhel, and the Engliſh pound, are known to every body; and I would therefore think you would do an eſſential ſervice to your numerous readers, if you would recommend to your correſpondents, to uſe invariably theſe ſtandards. There is no part of the information contained in the Farmer's Magazine of more real uſe to all deſcriptions of people than the Agricultural reports; and they ought therefore to be ſtated with clearneſs and preciſion; ſo that

that the country gentleman, the ordinary farmer, the merchant, and the mechanic, may know what the ſtate of the country really is, as well as the corn-dealer and the fleſher. I am diſpoſed to think, that a ſingle hint from you to your correſpondents will in future, rectify this. —25. *Jan.*

Mid-Lothian Quarterly Report.

THE winter has hitherto been extremely mild; vegetation, as yet, has met with no check; the young graſſes never looked better; and ploughing, of courſe, is well advanced.

The various grain crops are turning out nearly as ſtated in laſt report. From the briſk demand, and prices offered, during the month of November, and firſt week of December, moſt farmers were induced to thraſh out a greater proportion of wheat and barley than uſual at ſo early a period of the ſeaſon; indeed, ſome of them have carried the matter ſo far as to thraſh out their all. But, notwithſtanding this, few of the bakers have much wheat on hand; neither have the barley merchants any thing like a full ſtock, with the exception of a few of the great diſtillers. Hence, it is thought that the preſent glut in the market for theſe grains will ſoon be at an end. Potatoes and oats, however, are plentiful and cheap. The former are ſelling at 8d. per peck of 28 lib. Amſterdam weight; and oat meal at 18s. and 18s. 6d. per boll of 140 lib. avoirdupois.

The butcher markets continue fully ſupplied. Turnip cattle never throve better than in the preſent open ſeaſon. Beef and mutton ſell at about 9s. per ſtone Amſterdam, ſinking the offal, a little more, or leſs, according to the quality and ſupply at market.

The country is again getting full of live ſtock; hence, any ſets of paſture graſs that have lately taken place, have been at a conſiderable advance.—*January 25th.*

Northern Quarterly Report.

THIS northern diſtrict has ſeldom experienced a more favourable winter; for we have had little ſnow, whilſt the froſt has been ſo gentle as ſcarcely to ſtop the ploughs a ſingle day;—circumſtances that rarely happen in this high latitude, and which, if ſucceeded by a decent ſpring ſeaſon, will make the work of that period go briſkly forward.

In the county of Inverneſs, the crop turns out fully equal to expectation; and, though that diſtrict ſeldom ſupplies itſelf, it is highly probable that none will be wanted this year. In Caithneſs the crop is better than an average, both as to quantity and quality. In Roſsſhire it is alſo good; and a very conſiderable quantity will be exported from both diſtricts. Bear has had a briſk demand at 20s. and 22s.; Barley at 24s. and 26s.; and oats at 16s. and 17s. 6d.; all *per* boll of four firlots. The little wheat raiſed, brought from 35s. to 37s. 6d.; but the greateſt part of the diſpoſable grain is already in the hands of the merchants.

Provender,

'Provender, for ſtock of every ſort, is abundant; and the butcher market at Inverneſs is well ſupplied with excellent *graſs* mutton, at 4d. and 4½d. per lib. Beef ſells at 6d.; but if prices do not ſoon advance, turnip fed ſheep and cattle will pay very little for their *keep* this ſeaſon. The turnip crop is exceeding good, and hitherto has ſtood the winter well.——*Jan. 25th.*

Berwickſhire Quarterly Report.

THE weather, ſince laſt report, has been extremely propitious to the operations of the ſeaſon. Wheat ſowing was completed under favourable circumſtances, and the young plants have a very promiſing aſpect. Turnip ſtock has thriven well, having had no froſt, of any continuance, ſo ſevere as to prevent ſheep from taking a full feed. Ploughing is in a forward ſtate; and any ſnow we have had, has been ſo moderate, that paſturage has never been quite ſhut up.

Corn advanced conſiderably in price during the firſt of this quarter, particularly wheat, which for ſome time occaſioned the thraſhing of that grain in preference to others; but, ſince the middle of December, prices have declined a little.

Market prices at Berwick, Saturday, January 26th.—Wheat from 60s. to 66s.; Barley from 26s. to 28s.; Oats from 17s. to 22s.; all per boll of ſix Wincheſter buſhels.

At Dunſe Martinmas fair, cattle, in good condition for turnip, met with a ready ſale, and brought good prices. There was alſo a conſiderable demand for lean ſtock; but, the markets being fully ſupplied, prices were a good deal below thoſe of the preceding year.—— *Jan. 26.*

Fifeſhire Quarterly Report.

VERY favourable weather for every deſcription of field operations has prevailed in this diſtrict for three months paſt, and, in conſequence, labour is far advanced. We have had little ſnow; not much froſt: and, owing to theſe fortunate circumſtances, turnips have been hitherto conſumed with advantage. Thoſe that remain in the field are equally freſh and good as in the beginning of the ſeaſon.

The grain crop, of all kinds, has turned out fully better than expected; and ſo briſk a demand prevailed a long time for wheat and barley, that almoſt the whole of theſe grains have been thraſhed out and ſold. The diſtillers were the only merchants for barley, as barley meal was little in demand, and ſold at no more than 9d. a. 9½d. per peck. Peas meal is a trifle higher; but moſt of this article remains in the hand of the farmer.

Oats were an abundant crop, and meal exceedingly well. Potato oats are in much repute, and ſell about 2s. per boll higher than other varieties. The bulk of the oat crop is ſtill in the ſtack-yard; and there is not any reaſon to apprehend that oat meal will riſe above 20s. or 21s. per boll through the ſeaſon.

The wages of labourers is 18d. per day, and abundance of work for all who offer. Manufacturers are alſo in full employment; and as all ſorts of proviſions are plentiful, and, compared with the value of money, not over dear, there is no room for complaint with any claſs of ſociety. The demand for fat cattle is dull; and butcher meat ſells at 8½d. to 9d. per lib. of 22 ounces.——*Jan. 28th.*

Letter from Glaſgow, Jan. 29.

'The high price of grain, particularly wheat, occaſioned ſo much to be thraſhed out early in the ſeaſon, that we are of opinion the greater part of the wheats in the neighbourhood is not only brought to market, but alſo conſumed. From the ſcanty importation we have had of that grain, our ſtock on hand is but ſmall; and were our conſumpt as great as uſual, and to continue ſo, the quantity on hand would certainly be much exhauſted before we could have any new ſupplies; but the large ſtock we have of excellent oat meal and potatoes will leſſen the conſumpt of that grain. We are at preſent getting partial ſupplies of oats and barley from Ireland and the ſouth of Scotland: but from the low price of theſe articles in our market, our merchants will be poorly paid, unleſs either prices get higher here, or fall in other places. Our market is extremely dull for all kinds of grain at the following prices:

'State of Glaſgow Markets, Jan. 29.

Dantzic wheat	50s. to 51s.	per boll Linlithgow meaſure.
Scotch do.	38s. — 45s.	
Canada do.	45s. — 50s.	per 240 lib. Engliſh.
Iriſh barley	33s. — 35s.	per 320 do. do.
Scotch do.	32s. — 34s.	Stirling meaſure.
Beans and peas	21s. — 23s.	
Engliſh potato oats	24s. — 25s.	
Scotch do. do.	23s. — 24s.	Renfrewſhire meaſure.
Do. ſmall do.	17s. — 20s.	
Oat meal	20s. 6d. — 22s.	per boll of 140 lib.'

Eaſt-Lothian Quarterly Report.

THE weather, on the whole, has been mild and temperate through the laſt quarter: a few days of froſt in December ſtopped the plough; but, with this exception, no other interruption has been received. The latter end of January was froſty, accompanied with ſhowers of ſnow, but not ſo exceſſive as to retard field work in the lower diſtricts of the county.

The winter ſowing of wheat was, in moſt caſes, finiſhed before the middle of November; though, on the coaſt ſide, many fields were ſown afterwards, it being a received opinion, that an early ſeed time *in ſuch ſituations* is not calculated to benefit the crop: and it deſerves notice, that a greater extent of ground is already occupied with wheat, than ever

ever known in this county. The practice is beneficial, and that is sufficient to overcome every one of the antiquated notions formerly entertained respecting the injury done from sowing this grain extensively. In fact, the farms on which it is most extensively cultivated, are, in nine cases out of ten, in the best order, and under the most approved management.

Immediately after last report, the wheat and barley markets rapidly advanced, though the quantities presented for sale, at least of the first grain, were much larger than those of any former season. Prices rose to 47s. and 48s. per Linlithgow boll for quantities, and even to 50s. and 52s. in the ready-money market. This rise was occasioned by large orders from England, but did not last for more than two weeks, when a gradual fall took place, till the average was reduced to 40s. and 41s., at which prices sales in the middle of January were commonly made. The two last markets have assumed a different complexion, and prices have mounted up to their former level. Barley hovered up and down like wheat. At one time, the price was 34s. and 35s. per boll of six bushels; but it afterwards declined to 27s. and 28s., though now a little higher. Many oats being used by the distillers, lessened the demand for barley, and rendered the sale uniformly heavy, notwithstanding of the small quantity cultivated. Oats and peas have generally met with a dull sale: both these grains turn out well; whilst the demand for them from other quarters is not considerable.

The turnip crop yields a greater quantity of sound, fresh food, than known for many years; and the stock fed upon it are generally in a thriving state. The demand for fat cattle and sheep is not brisk; and the prices, compared with those sought in the shambles, are apparently low. Fat cattle cannot be reported as above 8s. 6d. per stone Amsterdam, sinking offal; whilst beef is 7d. and 7¼d. per lib.; Mutton rather lower.

An extraordinary large ox, bred by the late Colonel Hamilton at Pencaitland, and latterly fed by Mr William Aitchison distiller at St Clement's Wells, in this county, was sold by public roup, on Monday last, at no less a sum than 97l. 10s.; which price, it is presumed, much exceeds that of any ox hitherto bred in Scotland. The purchaser was Mr John Cowan flesher in Edinburgh.

Prices of grain this day at Haddington.—Wheat, of decent quality, weighing from 63 to 65 lib. per firlot, 48s. to 51s. Barley, weighing from 77 to 80 lib. per firlot, 29s. to 31s. Potato oats 20s. to 21s. Peas and Beans 17s. to 19s.; all per Linlithgow standard measure.——*Feb.* 1.

Haddington, February 8.

Our market this day had a full supply of grain; and sales, except for oats, were made at reduced prices. Wheat was at least 4s. per boll lower than this day se'en-night; Barley about one shilling; Beans and Peas much the same; Oats a trifle higher, and sold quickly. The wholesale merchants, who are the life and soul of the market, were shy of dealing unless on reduced terms.

ENGLAND.

Letter from a Gentleman in the County of Kent. Jan. 15.

'The weather, during the firſt part of the winter, excepting the end of December, being free from froſt or ſnow, great progreſs was made with the plough in turning in the wheat ſtubbles and other lands for the enſuing ſpring crops of barley and oats; and the hard open froſt of the laſt month has been very convenient for carting out manure on the barley ſtubble lands for beans. Every kind of crop in this county turns out poorly, and thraſhes very tough; the common price of thraſhing wheat, where the crops are beſt, is from 4s. 6d. to 5s. per quarter of eight Wincheſter buſhels; but in ſome pariſhes it is ſo bad, that it can only be done by the day, and coſts, in that manner, from 8s. to 16s. per quarter: Barley and beans 2s. 6d.; Oats 2s.; daily labour is 2s. 6d., and good workmen are very ſcarce. Turnips have grown much during the autumn; ſo that many late-ſown crops have turned out much better than was expected: the crop of this root, in general, is pretty good; which, with plenty of hay and after graſs in the beginning of the winter, made a great demand for lean Welch and Scotch cattle; but immenſe numbers having, by the high prices, been drawn thither, the markets became overſtocked, and prices, in conſequence, fell conſiderably. Beef and Mutton have been plentiful and cheap; but prices are now increaſing. The demand for the Navy and Army, in this county, occaſions a great conſumption, which is ſupplied chiefly from Smithfield market. We had a good ſtock of old wheat on hand; but, from the bad appearance of the laſt growth, the alarm of ſcarcity occaſioned the price in the month of November to riſe up to 128s. per quarter, and ſome more; but by a tolerable ſupply at the London market the price is now much reduced. Barley has been very unſteady in price; it is now worth about 50s., and Beans the ſame, per quarter; Peas 48s. to 56s., and Oats 30s. to 34s. Hops are a great article of culture in this county; they have been very plentiful and cheap this year; the price ſo low, that many of us are loſing much by our plantations; and we are in conſequence reducing them faſt. In the beginning of the year, good Hops were ſold as low as 4l. per cwt.; they are now got up to about 5l.'

Letter from a Farmer in the neighbourhood of London. Jan. 21.

'When I took up my reſidence in this diſtrict (Middleſex), I was aſtoniſhed to ſee how different its agriculture was conducted from what was practiſed in Eſſex and other counties with which I had been connected. My firſt attempt was to remove the large Hertfordſhire plough drawn

drawn by three and four horſes in length, which will not keep one yard in a direct line, unleſs held ſteady by a ſtrong man, who always has a boy acting as driver. In the place of this large and unwieldy implement, I introduced Eſſex ploughs, wrought by horſes abreaſt; and with theſe I have ploughed my clover ſtubbles. The prejudice is however ſtrong againſt them; and this has not been leſſened by my bringing ſervants from Eſſex, who were accuſtomed to plough without the aſſiſtance of a driver.

'I land-ditched a field of 16 acres with a mole-plough, and find that the practice anſwers well upon loamy ſoils, though prejudice was here as active againſt me as in the other caſe. I tried, firſt of all, to have the furrows made deep by the plough, but could not get it done deeper than ſix inches. This, however, did not diſhearten me. I ſet the ſhare of the plough very low, and was thereby enabled to make a good drain of 3 inches by 4 inches in diameter, 17 inches below the ſurface; after which they were cut acroſs with the ſpade, and run exceedingly well.

'In this county we have farmers of every deſcription, and the *caſt* is much more diverſified than in other places. The land is nearly all in the hands of Bankers, Eaſt and Weſt India Merchants, Cockneys, Bakers, Brewers, Officers, and in ſhort almoſt every character, except the real farmer. It is owing to this circumſtance, in a great meaſure, that labour is ſo exceſſively dear; for ſuch people will give any price for cutting corn and hay, which muſt be imitated by the induſtrious farmer, or he muſt run the riſk of ruining his crop by delaying his work till their's is harveſted.

'The wheats in Middleſex, though partially blighted, were not ſo materially injured as in Eſſex. There were great ſupplies of old grain on hand at the end of autumn, which have been regularly brought forward; and I do not think that more of the laſt crop is as yet thraſhed out, than had taken place at this time twelve months with the crop then in hand.

'Labour of all kinds is exceedingly dear;—12s. 14s. and 18s. per week is commonly given; and carpenters and other mechanics will earn 30s.'

Norfolk Quarterly Report.

THE late corn act has received, from almoſt every corner of the united kingdoms, a conſiderable degree of acrimonious examination; and in this county, where the idea of a petition to Parliament was firſt ſtarted, it has perhaps excited a ſtronger ſpirit of animadverſion, and occaſioned warmer debates, than in any other quarter. Profeſſional avocations will operate, in all ſituations, with nearly equal force; but here, private paſſions have mingled in the diſpute, and many have ranged themſelves as partizans, on the one ſide or other, as much from eſteem or averſion to the friends or oppoſers of the meaſure, as from attention to the real merits of the caſe. I conceive, therefore, that a

few obſervations upon this act will not inaptly precede a ſtatement of the progreſs made in thraſhing the crop of the late harveſt, and of the proportion ſtill to be expected from it in the market.

Unfortunately for the popular character of the bill, the price of grain advanced rapidly immediately on its paſſing. The oppoſers of the meaſure did not ſuffer an argument, apparently ſo favourable to their cauſe, to ſlip through their fingers, without applying it in proof of the pernicious conſequence which the act muſt, they contended, produce to the general intereſt of the community at large, thus ſacrificed to the ſelfiſh views of a particular claſs of men, forming comparatively but a ſmall portion of the aggregate population of the kingdom. 'I would riſk my exiſtence' (ſays one of its impugners) 'on the diminution in the price of grain following on the removal of this pernicious meaſure.' The advocates for the meaſure, with whom I moſt cordially agree in ſentiment, obſerve, that not to the act, but to the blight or mildew which, about the time that act received the Royal aſſent, manifeſted itſelf to a moſt alarming degree in the wheat crop, and to a poſitive conviction, at the ſame time, that the barley crop was moſt materially injured, are we to attribute this advance: For, even allowing a ſlight degree of alarm to have exiſted in the firſt inſtance, that alarm muſt long ſince have ſubſided; yet the price of corn continues high, and ſtill appears to be advancing. And, in fact, how can the act have produced theſe pernicious conſequences (as they are called) with which it is charged? It has neither allowed exportation nor prevented importation: On the contrary, I ſhould conceive it muſt have acted, in the latter caſe, as a ſtimulant, and tended conſiderably to increaſe the quantity brought from abroad. But, ſays the gentleman before alluded to, and who, it muſt be confeſſed, has attacked the meaſure with keener ſatire, if not with more convincing arguments, than any of his party, 'How can you judge of a crop after harveſt, when it is houſed and ſtacked, and no poſitive evidence can be obtained?' 'A perſon,' (he adds) 'would be as much in the dark, in gueſſing at the quantity of corn on a man's premiſes, by an external ſurvey of his ſtacks and barns, as he would be in eſtimating a bundle of bank notes enveloped in a pocket-book.' But ſurely any perſon, who has for many years been in the habit of obſerving the fields and ſtack-yards, and who this year took a ſurvey of them immediately after harveſt, muſt have been convinced that they did not contain two thirds of their uſual quantity: and if at the ſame time he learns, to poſitive conviction, that the barns are equally deficient of their uſual contents, becauſe it was deemed dangerous to horſe-tread them, ſo much clover having got up amongſt the thin barleys, as to occaſion great danger of heating, if cloſely preſſed—ſurely, though he could not aſcertain the produce to a peck per acre, yet he might, without ſubjecting himſelf to the imputation of raſhneſs, venture to aſſert, that it would fall very far ſhort of an average crop.

Something was certainly required to reanimate the ſpirit of the agriculturiſt, which, in conſequence of his loſſes in the two preceding years, began

began to grow languid and inert. In the neighbourhood of Norwich, when the farmers carried their corn to the merchant, it was almoſt an invariable cuſtom, in good times, to take back from the inns a load of manure, at the price of 5s.; but, in theſe unfortunate years, the ſame men could ſcarcely be prevailed upon to take it away, though offered as a *douceur* for their trouble. Nor can this circumſtance be a ſubject of rational ſurpriſe; for, however meritorious it may be to produce two blades of graſs or grain where only one grew before, (and this certainly is moſt highly meritorious), yet few will prove ſuch diſintereſted philanthropiſts as to attempt it, in any degree adequate to the general advantage of the community, without being ſtimulated by the hope of a remuneration for their toil and expence. Repeal the act to-morrow, and I am perſuaded moſt firmly, that it will not occaſion, on the M - day following, the ſlighteſt alteration in Mark-Lane; that the market will continue equally ſteady, as if no ſuch event had taken place; and that barley will even look up. The progreſs already made in thraſhing out the barley crop has, at this ſeaſon, been unprecedentedly rapid. Harveſt ended early; high prices; the capital crop of turnips, which made ſtraw, &c. of ſlighter conſideration than uſual, have each held out a powerful inducement to an early and vigorous application of the flail and the machine. There is another conſideration too, which muſt be taken into the eſtimate. On a conſiderable quantity of good land, the turnip crop of laſt year completely failed; and, on thoſe lands, where barley would have been the crop had the turnips ſucceeded, was ſown wheat. Here it is natural to obſerve, that the circumſtance which diminiſhed the quantity of barley, would increaſe the produce in wheat: but, granting this to be the caſe, it is to be remembered that this crop proved, almoſt in every inſtance, even more defective than the general produce, both in quantity and quality, not averaging more than 1½ quarters per acre. I do not however conſider the wheat by any means ſo nearly exhauſted as the barley. Farmers entertained a pretty general opinion that the former was moſt likely to maintain its value; and the price, at the beginning of the ſeaſon, was not ſuch as to tempt them to bring it to market, and therefore a greater reſerve has been made of it. Peas were a full crop. Oats much more productive than barley. As to ſheep, feeders complain greatly of their late markets; fat South-Down mutton having been ſold in Smithfield for 4d., and even ſo low as 3d. per lib.

I may add one ſtrong corroborating proof of a deficient crop and early thraſhing—the quantity of labourers now conſtantly applying for employment; who, as they muſt have work provided for them, or be maintained by the pariſh, are ſent to work on the highways; though their labour, at this ſeaſon, tends very little to their amendment. Notwithſtanding, therefore, the high prices of grain, I do not conſider this as a very profitable year to the farmers in general. They have, at the higheſt eſtimate, not more than two thirds of a crop; and that preyed upon by Property, and other Taxes—by an immenſely burdenſome poors' rate, increaſed beyond example—by ſo many labourers being paid out

of it, for doing comparatively nothing—and by an allowance of eightpence per head to every individual of a family conſiſting of more than four perſons, and which allowance muſt be increaſed in proportion to the increaſe in the price of wheat. Theſe united claims upon their profits will, I fear, leave no conſiderable general balance in their favour at the foot of their accounts.——*January 24th.*

Northumberland Quarterly Report.

FROM the date of the laſt report, the weather was generally freſh to the 17th December, when we had ſome froſt and ſnow. On the 19th the barometer was at 30.4 inches, the higheſt known during twenty years obſervations. This froſt continued till the 3d January; ſince which, we have had alternately freſh and froſt with ſome ſnow. On the whole, it has been very favourable for getting forward the farming operations neceſſary at this ſeaſon. The lands for ſummer-fallows are all ploughed, and thoſe for ſpring-ſowing are in great forwardneſs.

The Turnip crops, ſtated in laſt report to be remarkably good, have even exceeded expectation; having hitherto received no injury from froſt, are likely to become very plentiful; of courſe, conſiderably lowered in price.

The autumn ſown wheats are looking very healthy. The greateſt part of the ſpring wheat is yet to ſow; a few patches were ſown in the ſecond week of January.

The ſamples of laſt year's wheat are in general very indifferent; and univerſal complaints of diſappointment in failure of produce, or quantity per ſtook. Hitherto, our markets have been pretty well ſupplied with old wheat; but little of this is now left. Of the produce of other kinds of grain, there is no reaſon to complain: the quantity and quality of them may be eſtimated at a fair average.

Our corn markets were higher a few weeks ſince: but a drop is generally expected at this ſeaſon, as farmers of all deſcriptions are thraſhing for ſtraw; and prices are ſuch as to induce every one to ſell, as faſt as it is ready. The preſent prices per Wincheſter buſhel are, Wheat 10s. to 10s. 6d.; Barley 4s. 6d. to 5s.; Oats, 3s. 4d. to 3s. 6d.; Peas 4s. 6d.

The markets for fat are getting up. Beef from 7s. to 7s. 8d. per ſtone of 14 lib. ſink; Mutton from 6½d. to 7½d. per lib. ſink.——*Jan. 25.*

Yorkſhire Quarterly Report.

So far as the thraſhing of wheat has proceeded, the reſult fully confirms the preſage of the autumnal report, on the probable deficiency of the generality of that crop throughout this part of the iſland, as the return is actually much leſs than was then expected. High as the price of grain conſequently is, it is ſtill perhaps much too low for the ſtate of the produce and ſtock on hand, eſpecially if we keep importation out of view, which no doubt has brought conſiderable aids to the ſupply of London, and ſome other parts of the country. Our markets have hitherto been better ſupplied than was probable at one time.

time. The prices are conſidered high, and doubtleſs have forced much into ſale, which, in the end, may be no advantage to the conſumer, if economy be not ſtrictly attended to.

Notwithſtanding the large foreign ſupplies, at an immenſe loſs to the community, (particularly when high prices prevail, the general balance of the corn trade being againſt us), very probably the ſtock of wheat will fall much ſhort of the whole year's conſumption. Barley, though not a bad crop, is alſo at a high price: much of it is ſuppoſed to be uſed for bread in the midland and other counties.

While ſuch notorious diſcouragements to the production of grain, as the tithes, &c. remain unmitigated, a heavy reſponſibility reſts ſomewhere, which may one day come to be more imperiouſly inquired into; for if external circumſtances continue for ever to engroſs the attention, to the utter neglect of domeſtic concerns of much greater pith and moment, we may ſoon exhibit a picture, of which even our own native oak now and then offers a faint emblem;—when that king of the foreſt happens to ſhow the ſpecimen of a tree of nobleſt ſize and ſtature, apparently flouriſhing in ſurface, and beauty of foliage, yet, when tried, is found decayed at the heart. The beſt wheat is at 14s.; Barley 7s.; Oats 4s. 6d.; Beans 6s. 6d. per buſhel of Wincheſter. Potatoes about 3s. per boll upheaped.

The growing wheats, in general, look worſe than uſual; but the ſtate of the weather has of late weeks been ſo variable, with a conſtant alternation of ſnow, rain, froſt, and thaw, that it would be wonderful if they looked well. Leſs ground is ſown with wheat than common in this diſtrict.

Notwithſtanding the very unfavourable weather, the turnips have reſiſted the froſt better than uſual, and are found, nouriſhing, and productive; the price about 4l. per acre for the beſt; Hay about 4l. per ton. Clovers and other ſeeds continue for the greateſt part to be very promiſing.

Both fat and lean cattle and ſheep continue at lower prices; the latter, in particular, ſometimes ſo low, at our late markets, as to be rather diſcouraging. The want of the uſual demand from the greater manufacturing towns, is aſſigned by ſome as the cauſe. The beſt Beef 7d.; Mutton 6d.; Veal 7½d.; Pork 6d. per lib. avoirdupois. The wages of ſervants and labourers in huſbandry, &c. &c. are very high. —*Jan.* 25.

Letter from London, January 28th.

'Since the date of my laſt letter (October 30th) prices of wheat and other grain have been very unſteady, and now ſtand much higher than they did at that period. The great advance which took place on wheat in the beginning of November, could not be owing to any immediate ſcarcity in this market, as the ſupply was abundant, even on the day when our prices roſe to the higheſt, (the 12th of November, when wheat ſold at 136s. per quarter), and the quantity of flour in town had been great from the commencement of harveſt. The cauſe

of

of ſo great a riſe I believe to have been owing to the general opinion which was then formed of the defectiveneſs of the wheat crop, both in quality and quantity, eſpecially in thoſe counties from whence we generally derive the beſt grain and the greateſt ſupplies. The quantity of wheat, however on ſale, both Britiſh and foreign, ſoon became ſo large, that the prices, for two or three weeks after the above period, kept regularly declining; and although this cauſed a proportionate fall in flour, ſtill the price of the latter article was ſo much above what it could be made for in many parts of the country, that large quantities have been received, not only from the northern coaſt, but from various parts of the interior, which has kept the London ſtock of flour very full. For ſome weeks, markets were very dull, and few ſales made, either of wheat or *flour*, even at the reduced price at which the country flour was offered. But, within theſe ten days paſt, the wheat market has conſiderably advanced, though the ſupplies from the coaſt, and flour from the interior, does not fall off; and large ſales have been made of both at advanced prices. There appears no adequate reaſon for this advance, but the conſideration of the time that muſt elapſe before importations can be made from abroad, and the probability that the late ſupplies from the country cannot be maintained. With reſpect to the great riſe on barley, (which at one time was ſold for 70s. per quarter), the quantity preſented for ſome weeks was ſmall, and not at all equal to the demands of the maltſters, who had then commenced working, but who, from this great advance, were ſoon obliged to ſtop. The high prices given, encouraged large ſhipments from the corn diſtricts, which, coming altogether, the fall was as rapid and great as the riſe had been, fine barley having fallen to 46s. per quarter. The ſupplies of beans and peas were alſo ſmall for ſome weeks, and prices conſiderably advanced; old beans being much wanted.

'The ſupply of oats has been good, and prices pretty ſteady, though now a little advanced. The conſumption being very great, it is probable that prices will not be much lower, except occaſionally on a large arrival from abroad. The ſeaſon is now coming on when graſs-ſeeds will be in requeſt: but although the maiden clovers have produced ſome fine ſeed, yet the general produce being materially defective, and our great reliance for additional ſupply being confined to Holland, it is the general opinion, that prices will advance as the ſeed-time approaches.

'The quantity of wheat at market this day not being great, and our neighbouring country markets appearing to fall off in their ſupplies, a good many buyers appeared, and the article experienced a farther advance. The current price of fine Dantzics was 126s. per quarter: for ſome ſuperfine ſamples more money was obtained, and other ſorts ſold dearer in proportion, as noted below. The barley trade, in general, revived to-day; and prices of the fineſt ſamples were two ſhillings per quarter dearer. In beans and peas we have no alteration. A good many oats have arrived ſince laſt Monday: however, the ſame prices were readily made, particularly for the finer ſorts.

'State

'State of London Markets, Monday, January 28.

'Wheat, new	65s. to 100s.	per quarter.
——— Fine Eſſex	115s.	
——— Old	70s. 105s.—116s.	
——— Fine White	124s.	
——— North Country, new	70s. 100s.—110s.	
Very fine higher.		
——— Foreign Red	80s. 95s.—105s.	
——— White Dantzic	100s. 120s.—126s.	
Black Wheat	65s.—85s.	
Rye	56s.—60s.	
Barley	44s. to 50s.	per quarter.
—— Fine	52s.—54s.	
Malt	82s.—88s.	
White Peas	48s.—52s.	
Fine Boilers	60s.	
Grey Peas	47s.—50s.	
New Small Beans	52s.—54s.	
Old ditto	54s.—56s.	
New Tick ditto	43s.—45s.	
Old ditto	48s.—52s.	
Oats, long feed	26s.—30s.	
—— Short Smalls or Frieſlands	32s. 34s.—35s.	
—— Polands	28s. 35s.—36s.	
—— Potato	35s. 37s.—38s.	
Fine Flour delivered to the Bakers	90s. 95s.—100s.	per ſack.
North Country Flour	80s.—88s.	
Red Clover Seed	60s.—112s.	per cwt.
White ditto	80s. 112s.—120s.	
Treſoil	20s. 30s.—42s.	
Rye Graſs	21s. 30s.—38s.	per quarter.
Tares	40s.—48s.	per do.
Hay	65s.—80s.	per load.
Straw, Wheat	36s.—42s.	per do.
Potatoes	40s.—80s.	per ton.
Beſt Kidney ditto	100s.—120s.	per do.'

By accounts ſince received, we are informed that the wheat market on 4th current was conſiderably depreſſed, large quantities having arrived in the river from the eaſtern and northern ports.

Letter from a Farmer in Wales. Jan 25.

'We had a continued froſt for three weeks before Chriſtmas, and were beginning to be afraid of the growing wheat, as it was without a covering of ſnow; but though the young plants look weakly, they do not as yet ſeem injured in other reſpects. Much will depend on the weather we have in ſpring; becauſe, if ſevere, theſe weak plants will be

be unable to live till more genial weather arrives, eſpecially as many fields were ſown at a late period of the ſeaſon.

'Laſt year's wheat crop falls ſhort even of what was expected at harveſt, and had it not been owing to the large ſtock of old grain on hand, I do not know what would have become of us. We have plenty of ſtraw to be ſure; but it yields little grain; and the quality and weight is generally complained of. Barley turns out better than originally ſuppoſed. Oats are alſo good. Prices at preſent are; for Wheat 30s. per buſhel of 168 lib.; Barley 48s. per quarter; Oats 24s. per ditto; and Beans 64s. to 65s. per ditto.

'We had no demand for cattle and ſheep of any conſequence this winter; of courſe prices are low, and many on hand. This want of ſale obliged farmers to thraſh out more than the uſual quantity of grain ſo as money might be got to anſwer their payments, which will have an effect on the grain markets afterwards. Turnips were an excellent crop, and have ſtood the winter well; but will be ſoon conſumed, owing to the large ſtock of cattle and ſheep that remain with us.'

Average Price of Corn p. *Quarter in Great Britain, for the Week ending January 19th.*

	Eng. & Wales.		Scotland.	
	s.	d.	s.	d.
Wheat	86	7	73	2
Rye	53	0	36	0
Barley	44	2	36	3
Oats	25	10	22	9
Beans	48	0	35	11
Peas	51	1	36	1
Oatmeal	21	3	19	9
Bigg	—	—	32	9

Price of Meat at Smithfield, excluſive of the Offal, which conſiſts of Head, Intrails and Hide, and is worth about 1d. *per lib.—Per ſtone of* 8 *lib.*

	Friday.				Monday.			
	s.	d.	s.	d.	s.	d.	s.	d.
Beef	4	6	5	4	4	0	5	0
Mutton	4	8	6	0	4	4	5	4
Veal	5	8	7	8	5	0	7	0
Pork	4	8	5	8	4	0	4	10

Newgate and Leadenhall.

	s.	d.	s.	d.		s.	d.	s.	d.
Veal	7	0	7	8	Beef in ſides	4	0	4	8
Pork	5	0	5	8	Ditto in lots	4	4	5	4
Mutton	4	0	4	8	Lamb	4	0	4	6

Paddington Market.

Hay per load 3l. 3s. to 4l. Straw 1l. 4s. to 1l. 6s.
Beaſts 109—Sheep 610—Pigs 24.

Tamworth

Tamworth Fair, on Monday January 21ſt, was well ſupplied with fat beaſts and ſheep. The beaſts, which were of heavy ſale, ſold from 6d. to 7d. per lib. ſinking the offal; and ſheep at about 7d. ſinking the offal.

Wakefield, January 25th. Our arrivals of grain continue ſmall, and wheat of ſuperior quality meets with ready ſale at an advance of 5s. per quarter; but little or no alteration in inferior ſamples. Oats of good quality are briſk of ſale at 6d. advance; inferior unſaleable. Barley, though more at market than laſt week, is further advanced full 2s. to 3s. per quarter. Beans ſcarce, and may be noted 2s. dearer.

LIVERPOOL METEOROLGY, 1804,

Continued from Vol. V. p. 505.

	Fall of Rain.		*Evaporation of Water.*	
	In.	Dec.	In.	Dec.
January and June incluſive -	12	66	11	40
July - - -	1	9	3	3
Auguſt - - -	2	35	3	0
September - - -	1	67	2	12
October - - -	5	90	1	75
November - - -	3	0	1	25
December - -	2	40	1	50
Total, as meaſured by G. J. Liverpool	29	88	24	32

POSTSCRIPT TO SCOTISH INTELLIGENCE.

Kincardineſhire Quarterly Report.

'We have enjoyed, as yet, a fine open winter. The weather has been variable, with ſevere gales of wind, moſtly from the ſouth and ſouth-weſt. Little ſnow has fallen, and the froſts have not continued for any length of time; which has allowed ploughing and other operations of huſbandry to be got very forward. Turnips keep very freſh and good, and appear little injured by the froſt. There has been little demand for fat cattle; they appear now to be in more requeſt. Our grain markets took a ſudden ſtart in November, and continued advancing for ſome weeks rapidly. Wheat reached from 50s. to 55s. per boll; Barley from 27s. to 30s.; Bear from 24s. to 26s.; Oats 20s.; but the prices declined again as faſt as they had riſen; and, for the laſt ſix weeks, not a boll could be ſold almoſt at any price. There appears now to be a little demand again for barley and bear, but at very reduced prices.

The graſs ſeeds, ſown laſt ſpring, look exceeding well; as alſo the young wheats: they have received little injury from the froſt, and appear freſh and ſtrong. Fodder will be plenty all over this diſtrict; and I never ſaw the cattle keep in better condition. *Jan.* 30.

(The

(The following Article is ſent us by a Correſpondent.)

We underſtand that Mr Loudon, the author of 'Obſervations on Planting,' &c. has juſt invented a very ingenious method of modelling eſtates, which will be of immenſe advantage to landed proprietors, particularly thoſe intending to improve, decorate or build. The variation of the ſurface is ſhewn exactly as it is in nature; and all the trees, hedges, roads, rivers, buildings, &c. are accurately raiſed on it, agreeable to a certain ſcale; and, afterwards, the whole is coloured from nature. A manuſcript volume of references, contains the names of the different farms and fields, the contents of each, and the nature of its ſoil, &c. with every other requiſite information. Mr Loudon has alſo a curious compoſition, which may be uſed without any previous preparation, and by which any gentleman may try, upon the model, the effect of any propoſed alteration or improvement: And alſo a ſmall wire net, each *meſh* of which is equal to an acre, by which the contents of any part may be inſtantly known, by applying it, and counting the meſhes which cover the field or ſpace to be meaſured. From the nature of the model, any changes which may afterwards be made in the ground, can be inſerted without injuring the piece; and hence no eſtate will ever require to be remodelled. Remarkable objects upon an eſtate ſuch as the manſion houſe, &c. can alſo, to give a clearer view of them, be modelled ſeparately, upon a larger ſcale than the general plan.

At firſt ſight, the unwieldineſs and bulk of a model would ſeem an inconvenience; but by dividing it into ſeparate parts (which parts are kept in a ſmall cheſt or box, and may be taken out and fitted together in a few ſeconds), it occupies little more room than a plan.

The advantages which Mr Loudon thinks will attend this mode of imitating eſtates, are the following, (viz.)

1. A proprietor will ſee a correct imitation or miniature of his eſtate, in the cleareſt manner, and without the riſk of being puzzled or deceived by a plan.

2. Every propoſed alteration or improvement, of whatever kind, will be clearly underſtood, and may be ſo pointed out to workmen, as that they will execute it with ſuperior eaſe and certainty. In planting and landſcape gardening, this will be of immenſe advantage; and, as a further aſſiſtance to it, Mr Loudon has alſo invented a kind of *working plan*, which will enable workmen to execute exactly the arrangement of trees, ſhrubs, and flowers, about any place, agreeable to the principles explained in ſection 3d of the 'Obſervations.' Thoſe who underſtand the mode of arrangement alluded to, and can compare it with the common mode of mixing all ſorts of trees indiſcriminately, will be convinced that this improvement is of great utility.

3. The effect of every alteration propoſed may be clearly ſeen before it is executed; whether it be the effect that changing the lines of fences, roads, &c. has in altering the contents of the adjoining encloſures (and this can be inſtantly found by uſing the wire netting); or the effect of the addition of wood or buildings, whether uſeful or ornamental!

mental. It is needleſs to add, that the ſcheme of improvement can be altered and varied upon the model, until the beſt effect ſhall be produced, which effect may afterwards be exactly imitated upon the grounds. Making trials, on the model, of the effect of alterations, will form a very inſtructive and rational amuſement for proprietors.

We have ſeen, at Mr Loudon's, two models of the North Berwick eſtate; one ſhewing the preſent appearance and contents of the eſtate in general; and the other ſhowing the effect of an intended new place of reſidence for the proprietor (Sir Hew Hamilton Dalrymple). In addition to this laſt model, an elegant manuſcript volume, illuſtrated by drawings and ſketches containing Mr Loudon's ideas of the place; his reaſons for propoſing the improvements, and practical directions for executing them; accompanied with *working plans*, a large *vertical profile* ſhewing the effect of the whole, and a general eſtimate of the expence.

Mr Loudon, we underſtand, intends to ſend duplicates of the above models, plans, &c. to No. 4. Chapel-Street, Bedford-row, his lodgings in London; where, or at No. 7. Terrace, Edinburgh, they may be ſeen and examined by any gentleman who ſhall take the trouble of calling.

To the READERS of the FARMER'S MAGAZINE.

The PUBLISHERS, with a juſt ſenſe of former favours, reſpectfully acquaint their numerous Readers, that they are under the diſagreeable neceſſity of raiſing the ſelling price of the Magazine, in order that the increaſed and increaſing expences attendant upon the work may be compenſated. Deeply impreſſed with gratitude for the unexampled ſupport hitherto obtained, they delayed this ſtep longer than conſiſtent with their intereſt, and now reſort to it with regret; though it affords them much pleaſure, that ſeveral gentlemen of acknowledged diſcernment, whoſe opinions were previouſly taken, have decidedly ſanctioned the meaſure with the fulleſt approbation.

From the commencement of this volume, the ſelling price of each copy will therefore be raiſed to *Two Shillings and Sixpence*, at which ſum the Magazine will ſtill remain the cheapeſt periodical publication in Great Britain. For extenſive original information, it is equalled by none; and, if compared with other agricultural publications which have been attempted in our ſiſter kingdom, the publiſhers are almoſt certain that an unequivocal verdict in its favour will be pronounced by an impartial public. The principles which have uniformly been acted upon in the courſe of the work will be ſteadily retained, and every aid given to the diſſemination of rural knowledge. Extra pages will be furniſhed when any thing particular occurs, and plates of uſeful implements in huſbandry will alſo be given, when ſuch can be procured.

NOTICES

NOTICES TO CORRESPONDENTS.

Mr Hay will pleaſe excuſe us for delaying his *Thoughts on the Agricultural State of the Country, &c.* Many other communications from different correſpondents are in the ſame predicament.

An anonymous *Review* of Mr Loudon's publication is received, and under conſideration. The gentleman who ſent it will obſerve that he is already foreſtalled; though probably this circumſtance will not prevent us from retouching the ſubject, eſpecially in ſuch parts as are only ſlightly noticed in the account now preſented.

The *Review* of Mr Nicol's *Practical Planter* is neceſſarily poſtponed.

Agricola on the *Poor Laws* will appear in our next Number.

Mr Low of Annfield is entitled to our beſt thanks for the communication lately made us. The like acknowledgement is due to the author of the letter concerning the *Chineſe Plough*.

The *New Year's Gift*, from our old and worthy friend R R. is truly acceptable. We are ſorry, however, that we could not uſe it immediately, though we will not fail to beſtow a ſhare of the gift upon our readers, before the article is out of ſeaſon.

We truſt that Pol-Œconomicus will pardon us for the liberty taken with his laſt communication. The alterations made, do not in the leaſt affect his argument; and we are utterly averſe to give unneceſſary offence, eſpecially to the gentleman therein mentioned, for whom we entertain much reſpect. If Pol-Œconomicus will kindly favour us with his addreſs, ſatisfactory reaſons ſhall be communicated to him. A ſubject, which he ſeems well calculated to elucidate, ſhall alſo be ſubmitted to his conſideration.

The author of the letter *On the Comparative Trial made at Edgerſtone with different Breeds of Sheep* ſhall be gratified. The wafer unfortunately had been placed on his addreſs, otherwiſe he would have heard from us reſpecting ſome parts of the letter. If the deficiency is ſupplied, we ſhall not fail to write him immediately.

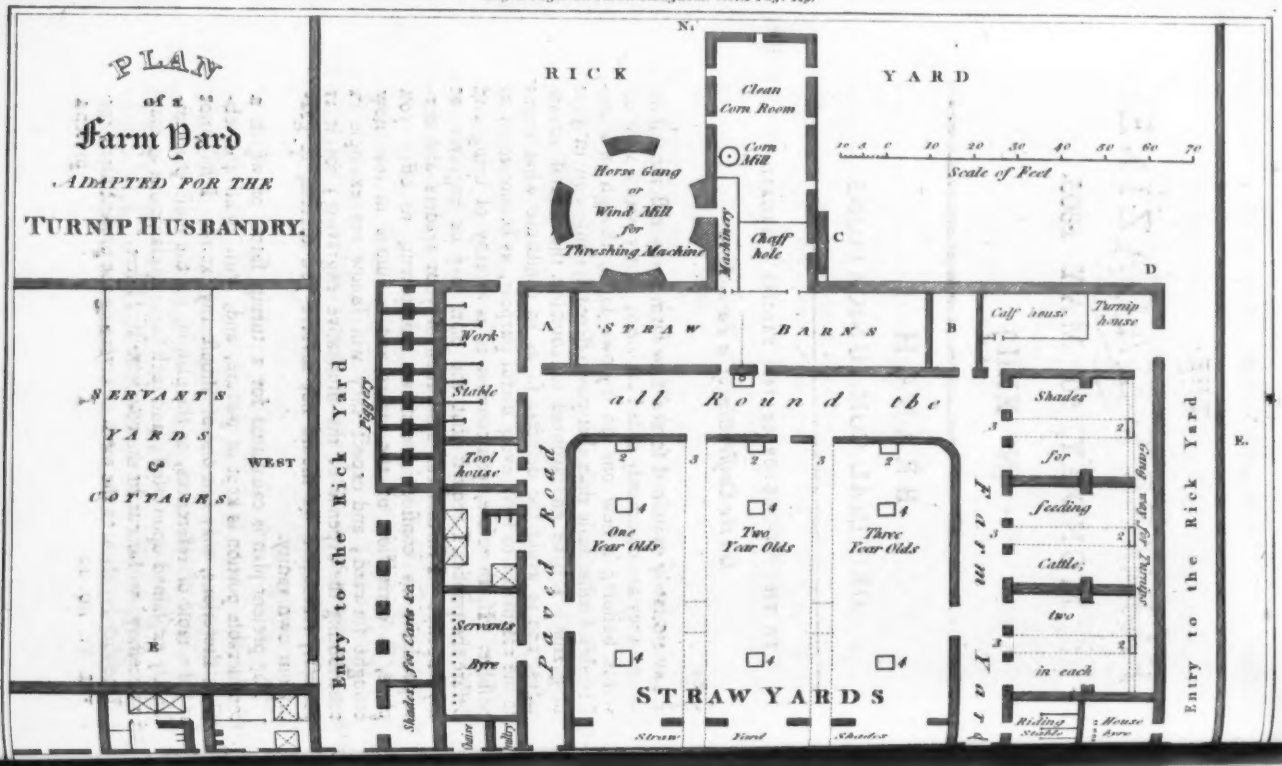
The letter on *Kentiſh Huſbandry*, and various other communications lately ſent us, will be duly attended to. We are ſo much in arrears to ſeveral correſpondents, that an adequate apology can hardly be offered.

No. XXII. will be publiſhed on Monday, 20th May 1805.

ERRATUM IN THIS NUMBER.

In Lord Somerville's letter, p. 4, the punctuation of the laſt ſentence, ſecond paragraph, has been executed in a way which renders the ſubject almoſt unintelligible. The reader is requeſted to correct the paſſage as follows:

'My own ſoils, of which the queſtion is aſked, are, *firſt*, a loam on a limeſtone rock, free fine working land if at all level; 2*dly*, ſtone braſh tending towards a gravel; and, 3*dly*, clay.'

[*D. Willison, Printer, Edinburgh.*

Engraved for the Farmers Magazine Vol. VI Page 129.